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THE

WINDOW FLOWER GARDEN.

BY

JULIUS J. HEINRICH.

HANDSOMELY ILLUSTRATED.

NEW AND ENLARGED EDITION.

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INTRODUCTION.

Probably no other occupation or amusement is more innocent in itself, or more devoid of injury or annoyance to others, than the cultivation of flowers. It furnishes abundant recreation to those in health, while to the invalid it affords most acceptable and interesting occupation.

The pleasures arising from the culture of flowers, are harmless and pure ; the production of a new tint, a shade of color, here becomes a triumph. It may be regarded as a mere chance, but it comes as the reward of morning and evening care, of daily watchfulness. Flower culture as a pursuit, excludes none, but welcomes all—the poor as well as the rich. It affords the excitement of competition, but the contest is without ill-will. No other pursuit can be followed with equal success by those who live in the country, as well as those who dwell in cities, and success attends the deserving in all places alike. There can be no surer indications of a happy home, than a flower-decorated window or a neatly kept garden, however small it may be.

No occupation for leisure hours so brings pleasure without surfeit. The more we advance, the more eager we become to go still forward. Nothing so entertains and

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instructs the minds of juveniles as the cultivation of flowers, and how many lessons of carefulness and industry they teach.

Let me endeavor then, by means of a few simple directions for the management of plants and flowers in the window or conservatory, to show to all the members of the family, and especially the children, that the cultivation of flowers is not difficult, and brings more real enjoyment than many more expensive amusements.

Intending this work for all, including children, I shall exclude, so far as possible, the technical terms used in our business, and endeavor to give the most simple directions in a manner that will be understood by all.

JULIUS J. HEINRICH.

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THE WINDOW FLOWER GARDEN.

CHAPTER I.

THE SOIL.

Plants receive their nourishment from the constituents of the soil in which they grow; with plants in pots, it is therefore especially necessary to have the soil in a sweet and rich condition before using it. If you have but a few plants to re-pot, and it is not convenient to mix your own soil, it is better to procure potting soil from some florist near at hand. Where a large number of plants are cultivated, and there is space in the yard or garden in which to mix or make your own soil, the following directions will be found useful. The first named mixture is the one used by all florists, and the best. Cut sods in some pasture-field or common, from two to three inches thick, of any convenient size, and lay these sods in alternate layers with good cow or stable manure. Make alternate layers of manure and of sods three inches thick, piling one upon the other, until you have a heap of the shape shown in figure 1, of course the size will vary according to the quantity of soil needed. A heap, with the base measuring three feet square and three feet high, will

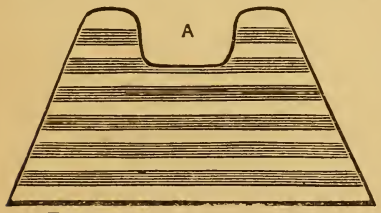

Fig. 1.—SECTION OF SOIL HEAP.

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give about three barrels of soil. At the top of the heap, dig a hole (*A*, fig. 1), about 10 or 12 inches deep, leaving enough soil on the sides to prevent the water which you may need to put in, from running out. Make this heap early in the spring, and let it rot all summer. If the season is very dry, fill the hole on top, with water, once or twice a month, so that it may be well decomposed before it is needed for use. Into this excavation at the top of the heap, may be thrown all the slop-water from the house. This will make the soil rich and mellow; much useful fertilizing matter is thrown away in slop-water. When the soil is wanted for potting, mix it well, and rub it through a sieve, which may be fine or coarse, as needed.

Another mixture is made with Bone Dust, or Blood and Bone Fertilizer, to mix with the soil, instead of manure. To one part of Fertilizer, add 8 to 10 parts of soil, mix well, and let it lay in some out of the way corner of the yard, as it will give a very strong odor for a little time. It must be well stirred once a week, and in about four or six weeks it will be ready for use. I find this much better than mixing it and using it at once. These fertilizers are all more or less heating, and not so favorable for the best growth of the plants; I therefore prefer good rotten manure to any of them. Street sweepings or sand may be mixed with the soil as needed for such plants as Ferns, etc. It makes the soil lighter to mix with it one-sixth of its bulk of sand or street sweepings, as may be needed.

CHAPTER II.

POTS.

But very little has been written as to the kind of Pots best for the successful cultivation of plants. This being a matter of great importance, I shall devote a chapter to the subject.

After years of trial and experience, I find that the best pots in which to grow plants, are the common clay pots shown in figure 2. Plants do better in them with much less care, than in any thing else yet used, for the following reasons: Those accustomed to grow plants in pots, will have noticed that the sides of the clay pots are always moist, and often covered with a greenish, slimy substance. The cause of this, is, that the surplus water arising from watering the plants, finds the sides of the pots the quickest outlet. When there is too much water for the sides to let out, it runs into the saucer, if one is provided to catch the water. This side drainage is very essential, as it prevents the soil from becoming sour, which it is apt to do if in a glazed or painted pot; such a pot allows no air to penetrate to the interior. When the soil once gets sour from stagnant water, it will cause the roots to rot, and then the plant dies. It will readily be seen that the side drainage is of as much consequence as that at the bottom of the pot, and for this reason, glazed or painted pots will be found inferior to the clay pots, as they have all the pores in their sides closed with paint, etc. "Oh" some one may say, "they have holes in the bottom," but the thousands and millions, I may say, of little holes in the sides, which

Fig. 2.—FLOWER POT.

you can not see with the naked eye, are of more consequence than the single large one in the bottom.

Fancy pots can be used by placing small pieces of charcoal in the bottom of the pots for drainage. In this way they will answer as well as the clay pots, with a little care in watering. They can also be used as a sort of pot cover, and thus will serve as a receptacle for the surplus water, by potting the plants in a common clay pot, selecting one which will fit into the fancy pot, provided the latter has the opening in the bottom securely corked.

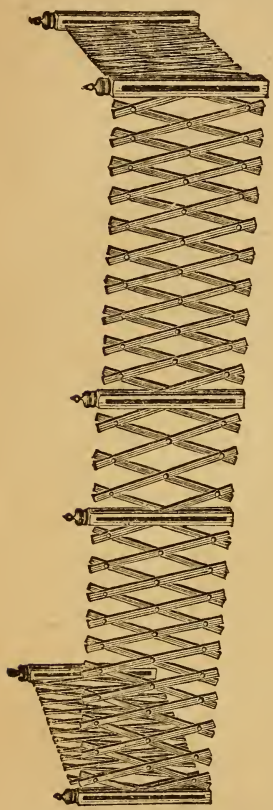

Fig. 3.—WINDOW POT FENCE.

Next to the clay pot, a wooden box or tub is best. They have a little side drainage, the wood being porous, especially the soft kinds, such as pine, etc. ; but they should not be painted with oil paint, as this will stop up the pores. Those determined to paint them, can get the dry paint and mix it with turpentine only, and give a very light coating. The best way is to use a Window Pot Fence, figure 3, or a Pot Cover, figure 4, for the tubs. The pot cover, etc., are shown to advantage in figure 6. Tin or other kinds of metal pots or pans are also not desirable. If care is taken in watering, and they are well drained in the bottom with broken pots, and placed in rooms kept very warm, they may do, but

you will find it tiresome work, and will very soon stop using them.

Before closing this subject on pots, I wish to call attention to decorating clay pots with plain or fancy pot covers, figure 4; also see figure 6. They will hide the pot and give it a very neat appearance, without interfering with the side drainage in any way. These covers are very ornamental, are finished with French Gilt, Silver-Plated or China nails, and can be opened or closed, to fit different sized pots. They are made of Black Walnut or Whitewood, painted green, red, blue, yellow, etc. Some are also gilded like picture-frames, and others have gilt and green bars. They can be had of any size, from 4 to 8 inches high.

Fig. 4.—POT COVER.

It is necessary to wash the sides of pots every three weeks or so, as they need it, and they will look like new. With a pot cover and the pot kept clean, it will look just as nice as a fancy pot, cost much less, and the plants are sure to be healthy.

Iron Vases are employed in large numbers. When they are used, they should have two or more handfuls of broken clay pots in the bottom, before putting in the soil. This will be found very beneficial for drainage; the larger the vase, the more broken pots will be needed. But even with drainage and all other precautions, care must be taken not to water too much. I once superintended an establishment where we had six vases setting on the wall; one was cracked from the top two-thirds down, the rest were perfect. The plants in this broken vase did better than any of the others, showing the benefit of good drainage. Water your vases well only when they need it.

CHAPTER III.

SAUCERS FOR POT PLANTS.

In placing plants on shelves, stands, tables, etc., always have a saucer under the pot, but never allow it to get full of water, else the soil will get too wet, and cause the roots to rot. If your room is kept very warm, and you can not keep the plant from wilting, then put a little water in the saucer. I would only recommend it for such plants as Callas, Ferns, etc. The saucer is to catch the surplus water that would otherwise run out of the pot, and soil the table or carpet.

CHAPTER IV.

POT-MATS.

When you place a pot of flowers on a finely-polished table, that is liable to be scratched, always have a Pot-mat underneath the saucer. In some cases, napkins, etc., are used, but they get soiled, and these mats cost but a little more than it costs to wash the napkins. They are only square or round pieces of oil-cloth, bound with tape, and can be made at home of any size to suit, or they may be bought ready-made.

CHAPTER V.

THE LOCATION OF THE WINDOW.

This is no doubt of great importance, and when a choice of windows can be had, take one facing the south, where the sunshine may fall upon the plants as long

as possible. Some plants need all the sun they can get, others are contented with a little, while some do not need any. This must be looked after, as many make a mistake in this respect; that is, they place those that need a great deal of sun in the shade, while those that need but little or no sun they place in direct sunshine, and consequently make a failure, for which they very often blame others. I have given a list of the plants that will do best in the sun, and those best for the shady window, in Chapter XXX, page 62.

CHAPTER VI.

FITTING UP THE WINDOW FOR GROWING PLANTS.

A window can easily be fitted up to receive plants after the party has decided what he would like to have. Let us commence with the cheapest, and go up, as estimates can be given from a few cents to many dollars. First is the plain board shelf, which any one handy about the house can easily put up for a few cents, either with wooden or iron brackets. In all cases, whether the shelf is on the outside or inside of the window, let it set at least six inches below the edge of the window sill; this will give the plants all the benefit of the sun, and also hide the pots from view. Such plants as are in small pots can be easily raised by setting them on blocks of wood. If it is decided to go to more expense, select a Window Pot Fence, fig. 3, and fasten this on the edge of the shelf. It is better to use window boxes, instead of shelves, out-doors, and set the pots of plants in them. Then pack moss around them, to prevent them from getting dry very quickly, as will very often be the case with plants that are set on shelves outside of the window in summer; for in-doors it is not required.

After the shelf is put up for the outside of the window, select such plants as may be fancied, but let there be at least two pots containing climbers. Or sow the seeds of some climbers in two pots, and set one at each end of the shelf, and run a few strings up each side or fasten two extension ivy trellises, one on each side as in figure 6. But let them run from the pots on the shelf to the center of the window, or on each side; these will serve for the climbers to run upon. Then select some plants that will droop down over the front of the shelf, and cover it up so as to form a green curtain; these will have a good chance to bloom, as the sun will shine on them all day if they are facing the south. If in a shady situation, select some plants that will droop over and grow in the shade, such as Lycopodiums, Tradescantias, etc.

Pot Brackets come next on the list if a little more money is to be expended. These vary in price from $1.20 to $24.00 per dozen. In fitting up a window, always have a tin-pan or oil-cloth placed in front of the window on the floor, and let it project from ten to fourteen inches beyond the last row of pots, so that it will catch all the water and dirt that may drop from the plants, and thus keep the carpet clean.

In figure 5 is shown one of the cheapest window shelves extant. The ends are made of iron, sides and bottom two and one half inch Walnut, and Ash slats with a bead run upon the edge. Slats are sent in lengths, and can be cut to fit any window. It is but a moment's work to attach this shelf to the window, and it is brought just at the sill. The old way, with a bracket below, compelled putting the shelf too high or too low. The front slat prevents the pots from being knocked off by children or by the wind. It can be attached to the inside or outside of your window. The price of this shelf with ends, slats, two single cup flower-pot brackets, all complete, is $2.50. Shelf alone, $1.25. Ends, per pair, 75c. Slats, per set, 50c.

The cheapest and also the neatest design is shown in figure 6. It can be used on either the inside or outside of the window, and with little trouble in removing it. These goods are all made of Black Walnut, handsomely finished, and fastened with fancy nails. They open and close freely, and may be adjusted to fit different windows, pots, shelves, or flower stands. *A* (figure 6) is an Exten-

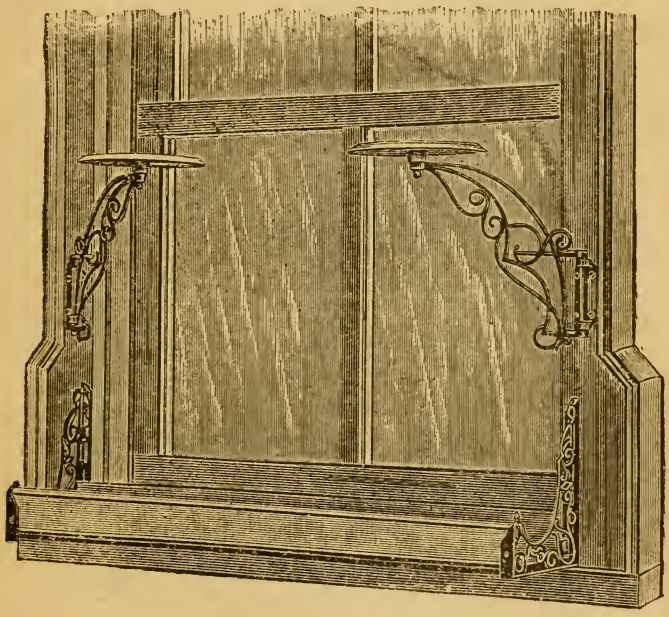

Fig. 5.—WINDOW SHELF.

sion Ivy Trellis, six or eight inches wide. *B* is an Adjustable Flower-pot Trellis, *C* is an Adjustable Flower-pot Cover, and *D* is a Window Garden Fence. The price of this design complete is from $4.00 upwards, according to size of trellises *A* and *B* and number of Pot Covers.

Figure 7 is a very cheap but still a very neatly arranged window. This, like all that follow, are for in-doors

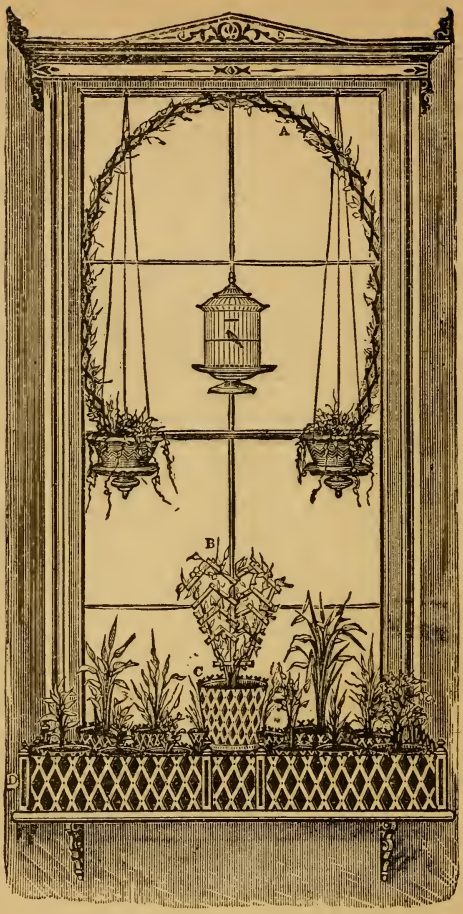

Fig. 6.—WINDOW WITH IVY TRELLIS.

only. It consists merely of a Plant Stand and Hanging Basket, made of wood or rustic work. Instead of the basket, a bird cage may hang in its place, which will also look very neatly. This will cost from $8.00 to $15.00,

according to the size of Stand and Basket, and the quality of the plants with which they are filled.

Figure 8 represents a well-kept Window Garden, that does not cost much to fit up, exclusive of plants, which can be raised from seeds, cuttings, or may be bought as desired. The two Brackets, for three pots each, cost $1.50 each, and the Window Shelf (figure 5), may be used also; use two each or more of Pot Brackets.

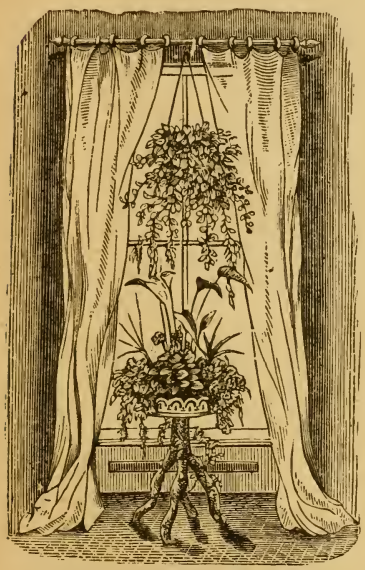

Fig. 7.—WINDOW WITH PLANT-STAND AND HANGING-BASKET.

Figure 9 represents a Bay Window, which is fitted up as a Conservatory. It contains three Hanging Baskets, one at each window, a Bird Cage in the center, with a one Cup Pot Bracket between the windows, one on each side, and an Iron Vase in the center. The pots on the floor are in zinc pans. This will cost about $10.00. More brackets can be used between the windows and also on the sides. The whole will cost from $12.00 to $15.00 without plants.

Figure 10, is a Plant Cabinet, which can be very easily built to any house, as it is simply a square projecting window, and will answer instead of the more expensive Conservatory. A hot-air pipe can be run from the furnace into this place, if the house is heated by a furnace, and the doors are closed at night. Here one or more hanging baskets can be used on the side and between

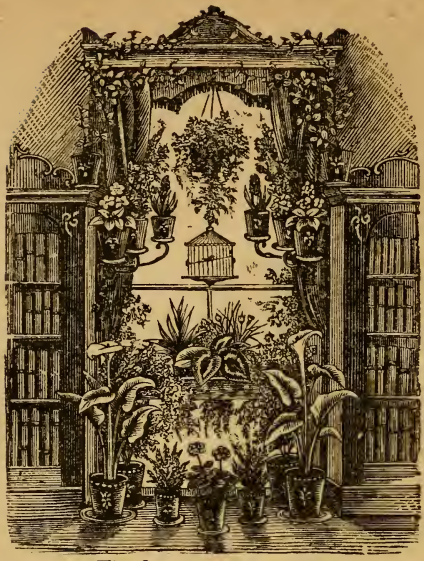

Fig. 8.—WINDOW GARDEN.

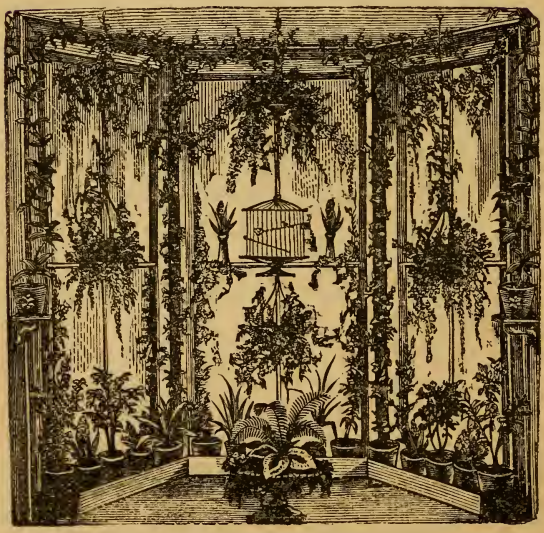

Fig. 9.—BAY WINDOW CONSERVATORY.

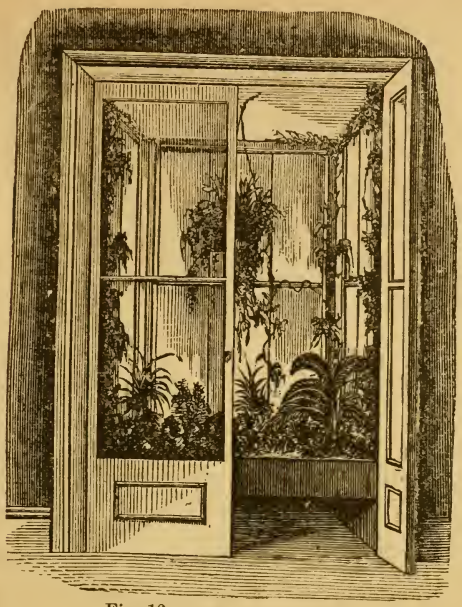

Fig. 10.—A PLANT CABINET.

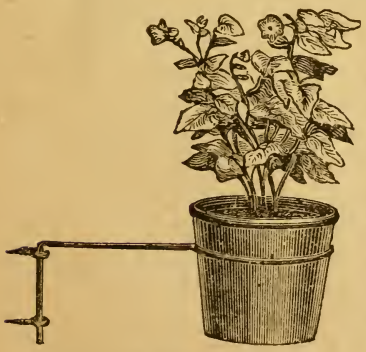

Fig. 11.—PLAIN POT BRACKET.

the windows. Or a solid bed may occupy the whole place, the plants being set out in the soil instead of leaving them in pots, or they may be in pots as preferred. The large growing kinds ought to be placed at the back, with the smaller one facing the window.

Flower-pot Brackets are exceedingly ornamental for the window. They are generally very strongly made of iron, being capable of holding double the weight

Fig. 12.—ORNAMENTED POT BRACKET.

that can be put upon them, and they are very tastefully bronzed. The arms of either the single one or those with more arms are moveable, so that they can easily be swung out of the way of curtains, etc. Figure 11 is the cheapest of all flower-pot brackets yet made ; they cost about 15 cents each. Then they run up with one or more arms, as shown in figures 12 and 13 ; these cost from 75 cents upwards, the price being according to style and finish.

Fig. 13.—BRACKET WITH ARMS.

Window Boxes are also much used ; they can be made of plain boards or carved wood (figure 14). These boxes are very ornamental, and are excellent for holding pots of plants, which is much better than planting them in the soil, as when a plant stops blooming it can easily be replaced with another. The vacant spaces are to be filled with moss. The price is from $4.50 to $8.50.

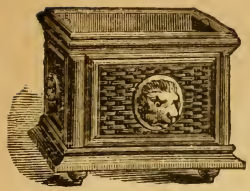

Fig. 14.—SMALL WINDOW BOX.

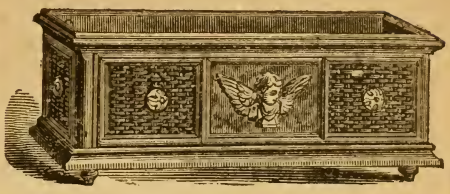

Fig 15.—LARGE WINDOW BOX.

Fig. 16.—JARDINIERE.

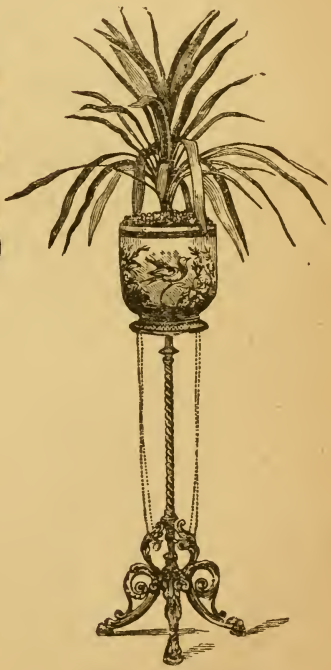

Fig. 17.—JARDINIERE.

Some parties may not desire to attend to a number of plants. To those I would recommend a *Jardinière* with a single fine specimen, such as Dracæna, as shown in figures 16 and 17. A good many more, both cheap and expensive designs, could be enumerated, but with these an idea may be readily formed of the styles desired.

CHAPTER VII.

BUILDING A CONSERVATORY.

I wish to call attention to the Conservatory, inasmuch as you will find, in after years, that this is a very important part of your work. Carpenters or builders should never build a Greenhouse or Conservatory without consulting an experienced florist, no more than they should think of building a hospital without the advice of a physician. What can they know as to the needs and requirements of plants? I offer some advice on this subject, which I think will be found useful in various ways.

See to it that the windows or sashes can be readily reached to give air without difficulty. Also so arrange things that you need not knock over half a dozen plants before you can get at them, and likewise see that the sashes you have to open can be easily worked. The top-airing is preferable, as it will not strike the plants suddenly on a winter's day. The heat rises to the top; for this reason the "airing" should not be too high, when not much heat can be spared. When there is plenty of heat it does not matter so much.

Always have the house face the south, and the floor a little inclining, so that the water will run to one side, into a smaller drain shown at *A*, figure 18. In this *W*, *W*, are the

Fig. 18.—SECTION OF FLOOR.

walls. *F* is the floor, from which the water will lead to a tin trough sunk in the floor. This saves much time in mopping.

A porch with pillars can readily be converted into a Conservatory by simply having sashes or window frames made to fit between the pillars or posts, and fastened with screws or hooks. They can be taken down in the summer, to allow the place to be used for a porch again, and stored in the cellar or elsewhere until autumn. This will not only afford a neat little conservatory, but will also help to keep the rooms warm. A small tight coal stove may be placed in it to heat it, or have a pipe run from the heater if there is one. In using a stove, care should be taken not to let any more gas escape than can be helped. Check the fire in the day time if it is too warm, but do not let the stove door be open, to allow gas to escape. Also be careful with the moisture. Place a pan or kettle on the stove and keep it constantly supplied with water.

Balconies can also be converted into small conservatories by simply enclosing them with sashes, and they may be heated as above. It is rather difficult to give plans or estimates for these, unless the individual place has been inspected. When so, it can be easily decided what it is best to do, how to do it, and what it will cost. There are many little places, which, by a small outlay, can be converted into a conservatory; in fact, a whole room can be so constructed as to be used for a conservatory if desirable.

CHAPTER VIII.

HEATING.

The heating arrangement depends altogether upon how the house or room is heated. Heating can not be regulated so well if the source is a furnace or a stove. If a stove is used, always keep a pan of water on it. This is beneficial to human health as well as to that of the plants. At night, pull down the shades, and cover the tender plants in cold nights with newspaper or bags made of newspaper to fit the plants, separate or in pairs, and try to keep in as much heat as possible. Close the windows early in winter, and open when the sun is shining on the glass in the morning. Do not give the plants too much heat through the day if you cannot give them as much as ten to fifteen degrees less at night, because it is at night that they are frozen. Therefore, if you can, keep the fire up all night. Always be guided by a thermometer, and you will not fail.

The heating of conservatories is especially treated in the next Chapter.

CHAPTER IX.

HEATERS FOR CONSERVATORIES, ETC.

Hitching's "Patent Base Burning Water Heater," is a very complete and efficient apparatus, designed expressly for heating small conservatories and plant cabinets, such as are frequently erected by amateurs, in connection with their residences.

The heater is as easily managed, and with as little care, as an ordinary base-burning stove, and may be left with-

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out attention for nine or ten hours during severely cold nights.

Figure 19 represents the heater with the water pipes connected at the left-hand side. Figure 20 is a sectional view of the heater, showing the water spaces around the fire-chamber and ash-pit, the magazine or feeder for coal, and the sifting-grate, doors, etc. It may be placed on the floor of the kitchen or basement of the dwelling, with a smoke-pipe to the chimney, and two small water-pipes leading to the conservatory, where they are joined to the larger heating pipes which pass round the conservatory.

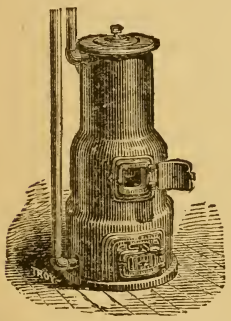

Fig. 19.—BASE-BURNER HEATER.

Fig. 20.—SECTION OF HEATER.

The fire-chamber is surrounded with water, as is also the ash-pit. This economizes the heat to the fullest extent, and admits of placing the heater on a board floor with perfect safety.

The price of the heater usually varies with the price of iron, but the average may be taken at $35 for the heater alone, the piping costing extra. By sending the size of the conservatory to be heated, and the average temperature desired, with the location and a small sketch of the conservatory, you can at any time obtain by mail an estimate of the cost of heating, fitting up, etc.

Hitching's "Improved Conical Boilers" are recom-

mended for simplicity and cheapness. I have had them in charge for years, and always found them the best, using less coal and giving more heat than any others. The boiler consists of two conical cylinders, one within the other, with a space for water between the two. The inside cone forms the fire-chamber, and reaches nearly to the top of the boiler, with an outlet to the smoke-pipe or chimney. There is also a flattened cone connected with the crown of the chamber, and extending down to within a few inches of the fire, and there connecting at the side of the chamber with a pipe for the passage of the water. The water enters through the lower pipe at the back part of the boiler, and is distributed through the space surrounding the fire-chamber, and through the flattened cone. As it becomes heated, it rises and flows out of the pipe at the top. The inside cone or fire-chamber offers a large amount of surface, which is exposed to the direct action of the heat from the fire. The flattened cone serves also to increase the surface for the fire to act on, and, by its peculiar shape, divides the volume of flames and hot gas, and causes them to strike with force against the surface of the chamber, without shielding any part from the direct radiated heat of the fire.

There are several makers who have adopted the principle upon which these boilers are constructed, and have made some trifling change in the shape and in the arrangement of the interior surface, which they claim to be improvements; but there are none that will give more heat for a given quantity of coal. The price of a small size boiler is about $32.00.

CHAPTER X.

GIVING AIR.

Plants require fresh air; therefore give it to them on every fine sunny and warm day; it need not be a hot one, but be sure to select a good warm day, and give them all the fresh air possible. If the weather is very cold, say below 32°, only open the window a very little (32° is the freezing point, but it seldom freezes much until it is 29 or 30°) and but a short time. Pull down the upper window or sash so that the cold air does not strike the plants too suddenly. When the outside temperature is about 35° there need be no fear, as this will not hurt them; but keep a careful watch, and when it falls a few degrees, close up gradually.

This airing gives the plants a healthy and vigorous growth, also a good color, while those that have no fresh air, although they have all the other care possible, will still be of slender, soft growth, not unlike many of the children raised in our fashionable homes. If the people in this and other large cities would but open their windows oftener, they would be much healthier, stronger, and need the doctor less,—although some people regard a healthy, robust person as not fashionable, but rude and vulgar. Airing holds good with plants as well as with people; so does sprinkling, which is only washing; repotting, which is feeding; these three, together with watering, are the principal operations of floriculture which ought to be carefully studied.

CHAPTER XI.

TEMPERATURE.

The Temperature at which to keep the room will have to be governed by the kind of plants under cultivation. The list of plants given in a later Chapter has the number of degrees they require, marked in the last row. If there are more or less of all kinds, keep the temperature as near to an average as possible. Some are hardy, others half-hardy, and others tender. The best plan is to place the thermometer in the window or conservatory, and see what part of it is the coolest; then place the hardy plants there. They will do much better than if set in a warm place. The half-hardy ones are those that need a little more heat than the others, but not as much as the tender varieties, and should therefore be placed in a little warmer part. Tender plants are those with which amateurs have the most trouble. They must be kept in the warmest part of the room or window, but still where they can get the sun and light; otherwise there will be trouble with them. Begonias, etc., belong to this list.

Try and keep the temperature of the room as near 40° as may be at night, and about 65° in the day; if it is getting much warmer, open the window for airing, from above, a little. Keep the thermometer in a shady place, so as to get the exact temperature of the room. See that the plants have a little air in the day. The object is to not accustom them to a warm temperature, for when this is once commenced you will have to keep it up, and if you fail to keep it up, you may be sure of losing your plants the first cold day. It is the sudden change from 70° to

25° or 30°, which kills plants; therefore accustom the plants to a cool temperature, and if a very cold chilly night should come, you will not lose so many, and may be not any. Therefore be cautious in the beginning, unless you have the facilities for giving plenty of heat; then let them have from 65° to 80° in the day, with a variation of 10° to 20° lower at night.

CHAPTER XII.

SHADES.

Shades are very necessary, and whenever a window is fitted up for plants, shades of any color or material should be used, as these keep out a great deal of cold. If you have a great many seedlings in pots, you can easily shade them from the hot sun. The shades also become useful when caught by Jack Frost, as you can keep the sun and light from the plants for a day or so. Be sure at night to draw the shades down; it helps to keep out the cold. If you have blinds, close them up tight just after dark, or earlier if you can.

CHAPTER XIII.

WATERING.

Watering is of great consequence to plants, and it should be looked to with more care than is usual. A great many ladies kill their plants by extreme kindness; that is, they keep on feeding them until the plants

get too much water, when the roots rot and the plants die. Then they come with a sad story and wish to know who is to blame for this, insisting that they have done all they could for their plants—probably too much.

The time to water and quantity needed can be readily determined. Stir the soil in the pot with your finger, and if the soil is dry, of a whitish color and dusty, it needs watering; if black or dark colored and sticky, it does not need watering. If very dry, fill the pot as full as you can, but then do not water again until it is again dry. This watering may last an hour, a day, or a week; it depends upon the temperature of the room. The warmer the room, the quicker the soil gets dry in the pot and of course the oftener it must be watered, and *vice versa.* But nevertheless the plants must be looked after every day, to see if watering is needed; but never give water if it is not required.

CHAPTER XIV.

SPRINKLING OR SYRINGING.

Plants which are syringed with clear water do much better than those which are not. I wish the reader, therefore, to pay particular attention to this. It should be done according to the temperature of the room. In very warm rooms sprinkling may be done daily; but where the room is not very warm, every other day will do. Various reasons for doing it can be assigned.

If the leaves of the plants are examined through a microscope, it will be seen that they are full of little holes or pores. Through these they inhale fresh air, or,

in other words, breathe. If the dust settles on the leaves, these little holes are stopped up or closed, and the plants will not live in this state very long. The object in syringing is simply to wash off this dust, it being otherwise a very long and tedious undertaking to cleanse each leaf with a sponge or cloth. We use a Brass Syringe or one of the Elastic Plant Sprinklers. For a conservatory, a Rubber-hose, with a fine rose nozzle on the end, is best. It depends upon the number of plants to be attended to. The Elastic Plant Sprinkler (figure 21) is a very useful and cheap article for a window. It costs by mail $1.50, and it can be used to sprinkle clothes also. Those who have a small conservatory will find a Brass Syringe (figure 22) more desirable.

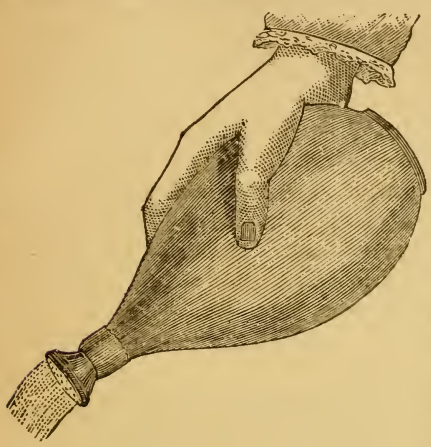

Fig. 21.—ELASTIC PLANT SPRINKLER.

For syringing plants a Brass Syringe is much better in

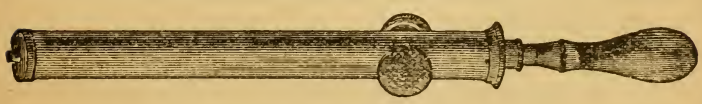

Fig. 22.—BRASS SYRINGE.

many ways. With it you can throw the water upon the under side of the leaves very easily, which can not be done by using the Rubber-sprinkler; you will very often need to sprinkle the plants that are setting on

the outside of windows; as the dust from the street very soon covers them, the Brass Syringe will be found much the best for this purpose. The little Brass Parlor Syringe, shown in figure 23, which sells at $1.50, will be found very convenient for the service required.

Fig. 23.—PARLOR SYRINGE.

The Fountain Pump, represented in figure 24, is best suited for a larger conservatory. If there is a Hydrant in the conservatory, or near by, a rubber hose will be found the quickest means of doing the work. There is still another advantage in sprinkling. The eggs of insects on the leaves are washed off as fast as they are laid, and thus no chance is given them to hatch. This is a very important matter, because many complain that their house

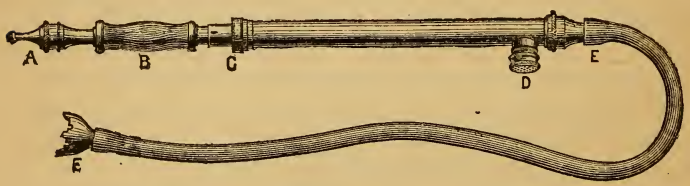

Fig. 24.—FOUNTAIN PUMP.

plants are full of insects. "An ounce of prevention is worth a pound of cure." I therefore give the above as a method of getting rid of insects, and also of keeping them down, but if they are too large, or have got the advantage of you, you must smoke them. See Chapter on Insects.

The way to sprinkle is easily learned. If the window is so fitted as to catch the water that may drip from the plants, you need not move them, but if not, place them in a bath-tub, a sink, or any vessel conveniently at hand, and give them a good sprinkling all over the leaves and

flowers. Do not think you will hurt them with the force of the water; the stronger the better will it wash off all the dust. But before sprinkling, see if they need watering. (See Chapter XIII.) If they are very dry, water them before syringing. If you use a tablespoonful of Water of Ammonia (Hartshorn) to a gallon of water to syringe with, it will be found still more beneficial.

CHAPTER XV.

INSECTS.

If the plants are kept clean and well syringed, you will be but little troubled with insects of any kind. Should they get the better of you, the best remedy is Soluble Fir Tree Oil Insecticide, which is the most effective, and is easily applied with an atomizer. For Green Fly, Red Spider, Scales, as well as Mealy Bug, this I find the best insecticide that I have tried. It will show its effects after only one application. It will not injure the most delicate plant, when carefully used, nor will it injure the finest fabric of any kind, and is perfectly harmless to the hands or person. For these reasons it has no equal, in my experience, for protecting plants from destruction by insects in the room or window, and is more effective than any preparation of which I have any knowledge. It is put up in small bottles for twenty-five and fifty cents each.

Directions.—Apply only evenings. Use soft or rain water only with the oil, in wood, tin or earthen vessels. Galvanized iron vessels must not be used. To make a cleaning solution for washing or syringing purposes, use one teaspoonful to one quart of water. For Green and Black Fly, Thrip, "American Blight," or Wooly Aphis, one teaspoonful to one pint of water. For Caterpillars and Red Spider, one tablespoonful of oil to one pint of water. For Mealy Bug, Brown and White Scale, two

tablespoonfuls of oil to one pint of water. For Mildew and Blight on Fruit or Foliage, one tablespoonful of oil to one pint of water. In the above cases, apply with syringe or atomizer, well under the leaves. For Ants, Grubs, Worms, Lice, etc., in the soil, one tea-spoonful of oil to one pint of water; drench the soil with clean water ten minutes afterwards.

CHAPTER XVI.

PRUNING OR TRIMMING.

Prunning is very much needed in the cultivation of plants. If the plants are too tall or spindling, and you wish to have them dwarf and bushy, cut off the crown or center stalk (figure 25) as low as you wish to have the plant. This will force the plant to start or send out new branches from the sides of the old

Fig. 25.—WHEN TO PRUNE.

Fig. 26.—PRUNING SHEARS.

Fig. 27.—PRUNING KNIFE.

stalk. If you wish them to grow taller, cut off the lower branches (*B*, *B*, *B*, *B*, figure 25,) and leave the center stalk to stand; this will force it up. Cut off all dead or dried branches, and see that all the withered leaves are removed, and especially withered flowers. By keeping

the withered or faded flowers cut off, the plant will bloom more freely.

A common scissors or a pruning knife can be used, but for larger plants use the Pruning Shears (figure 26). Those who use a knife in preference to the shears, will find one of a practicable shape represented in figure 27.

CHAPTER XVII.

TRAINING AND STAKING.

It is necessary that climbing plants should have some kind of a Trellis to run upon; they can be allowed to run up a string. Some home-made trellises may be used, or ornamental shaped trellises may be bought very cheap.

Figure 28 represents an Expanding Ivy Trellis, which

Fig. 28.—EXPANDING IVY TRELLIS.

can be used as an upright trellis or in the form of an arch over a door or window, as shown in figure 6, *A*. Two or more trellises can be readily joined together to form a larger arch, suitable for a bay-window. They can be extended to suit the length of the vine, or its shape. Figure 29 is an Adjustable Flower-pot Trellis. This can be opened more or less, thus making it broader, or closed, making it more upright and narrow. It is much handsomer and more desirable than the ordinary stationary ones.

Staking is quite different from training. By this term we mean running a straight, neat stick down the center of the pot and fastening the plants to it with some cord, so as to keep them straight and prevent them from falling to one side or the other. Tie plants up straight in the beginning, because when crooked they present a very bad appearance. Stakes are very much needed for such plants as Carnations, because they hold up the large cluster of flowers and will prevent the weight of the water, when syringed, from breaking them off. You can make the stakes yourself and paint them, or buy them all ready made for a few cents each.

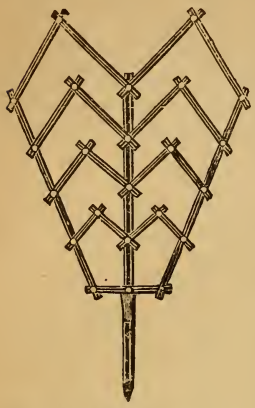

Fig. 29.—ADJUSTABLE POT TRELLIS.

CHAPTER XVIII.

TREATMENT OF WINTER FLOWERING PLANTS.

Plants intended to grow through the summer, to be removed to the Window or Conservatory in the winter, must not be planted in the garden beds in the spring or summer. If they are planted in the ground and taken up in the fall and potted for winter use, you will find that the leaves of the plant will drop off more or less, and in a few weeks there will be only the stalks left. It will be some time, and in fact nearly all winter, before they will recover. To prevent this, pot the plants in as small a pot as you can possibly get the plant without crushing the roots, and plunge or bury the pot in the garden border or bed up to the rim, as shown in figure 30.

Be careful not to fill the pot with soil when plunged, because the plants must be watered as well as if on a stand; but by plunging they will require less water, and it is for this reason that they are so treated. Through the summer they must be taken up about every five or eight weeks, according to their growth, and be re-potted in a pot one inch or so larger, in order to give the roots, which are formed through the summer, more room, and also to give the plant fresh nourishment. This re-potting is much better than watering with Guano Water, because guano is a very heating fertilizer, and very dangerous; it may destroy more plants in a few hours, than weeks or even months can replace. Bone Dust and Blood and Bone Fertilizers are not so destructive; but the best treatment is re-potting, which can be done in the winter as well as in the summer.

Fig. 30.—PLUNGING A POT.

CHAPTER XIX.

POTTING.

In potting plants, take care to set the plant in the center of the pot; it looks very badly to see a plant at one side. Fill the pot within half to one inch of the top, so as leave room for watering. By no means pile the soil up in the pot, so as to cause the water to run off instead of soaking in. For the larger plants, leave more room for holding water. Press the soil close to the roots to leave no vacant space in the ball of soil, and let it be firm to the roots.

In potting cuttings, or small seedlings, use 2¼-inch

pots; have your soil sifted through a fine sieve and well mixed as needed. Fill the pot full of soil; run the first finger into the center, making a hole large enough to readily admit the roots, then press the soil close to the plant with your two thumbs, and give a gentle tap on the table or bench to level the soil, and the work is done. With small seedlings or cuttings, shade from the sun until they have rooted, and water with a fine rose.

CHAPTER XX.

TREATMENT OF FROZEN PLANTS.

It sometimes happens that the temperature out doors changes suddenly and blows up very cold. If you have not enough heat to meet the emergency, some of the tender plants may be frozen. I treated a small conservatory a few winters past in this way. I had no heat in it but a small gas-stove for three days and four nights. The boiler in the house that kept it warm leaked, and the men were so long in mending it that, to help out, I drew down all the shades and kept the place as dark as could be in the day. In the morning I gave all the plants a slight syringing; this was kept up until all repairs were made. Then a little heat was used at first, slowly increasing it until the plants were used to it again; finally, I gave them light and sun. The loss from about $600 worth of plants was only $100 worth, although the soil in the pots was all frozen, and the Begonias, Bouvardias, and Heliotropes turned black. After all were cut down to about four inches from the pot, they commenced to throw out new shoots. If plants get frozen, keep them from the light and a little cool. Syringe them well, and gradually put them to the heat and light. Cut away all the black or frozen stems, so as to force them to

shoot out anew from fresh eyes. With Begonia Rex, and similar plants, cut away all the leaves and water sparingly, but syringe well.

CHAPTER XXI.

INCREASING PLANTS BY CUTTINGS OR SLIPS.

Make a box about five inches deep, of any convenient size, and fill it with sand. Press the sand down firmly and cut lines in it about three inches apart. Stick the cuttings in, and press the sand closely to the slip. After this, give it a good watering through a fine rose. The cuttings must be sprinkled often to give them no chance to wilt. The best plants to practice upon are Nasturtiums, because they root easily. Always take the upper end of the soft wood for the cuttings, and make them from two to three inches long. Keep them shaded from the sun, and so place them that they will get heat from below, and very little or none from above. For Geraniums, you must wait for a few weeks before they root. After you have put them in the sand you will see a white soft scum or skin form on the lower end. Now take them out and pot them, but press the soil very close, water well, and shade them until they have rooted.

Another way is to take a dish, about two or three inches deep; fill it about half or two-thirds full of sand, place your cuttings in it, and water freely, so as to make it very wet, like mud. It must always be kept moist, and do not let the sun shine upon it.

For propagating in the conservatory, take the shady side of the house, boarding up the front so that the heat can be kept underneath the bench. Fill the bench about four or five inches deep with sand, and then mark out the rows about three inches apart. Keep the upper part of the place as cool as you can, but do not let it freeze by

any means. Water with a fine rose watering-pot, and shade as needed. Some take a cutting, stick an oat seed in the bottom, and then pot it.

CHAPTER XXII.

HOW TO SOW SEEDS.

Prepare shallow boxes, about three or four inches deep, and of any length or width you like, or get seed pans made of clay, but boxes are just as good and cheaper. Take good rich light soil and leaf mould, mix well and sift it through a fine sieve with a $^1/_{16}$ of an inch mesh. Fill the box within an inch of the top, gently pat the soil down with a piece of board. Now sow your seed evenly, take a fine sieve and sift just enough soil over the seed to cover them; over fine seed sift but very little soil, larger seed require more. Do not cover too deep, or the seed will rot before they germinate. Water well through a very fine rose-pot, and keep shaded until they commence to come up, then give them plenty of sun. Shade but little those kinds that take so long to come up, such as Salvias, Primulas, etc., and place the box or pan in a warm place. When they are up, be careful not to give them too much water, and do not keep them in a moist place, or they will damp off, and you will lose them all. Give them a little air on warm sunny days to make strong, healthy plants. When the seedlings are about two inches high, pot them in small $2^1/_4$-inch pots, or "dibble" them in a flat box, about one and a half or two inches apart each way. After potting, water well, and keep them shaded, until they have taken root; then give them plenty of sun and air in warm days. You must now look after the re-potting of these seedlings, as they advance in growth. Do not "jump" from a small pot to a larger

one too quickly or too often. From 2¼-inch change to 3-inch pots, if you have them. If you have none, wait a little, and then use larger ones.

Staking and training must now be looked after. If climbers are raised, you must procure trellises (see Chapter on Training), and keep them running up. If you have nothing else, procure sticks and tie them up straight. If not done well now, your plants will be crooked as long as they live.

If you wish them to grow high, you have but to cut away the lower leaves, leaving the center stalk and crown until they have reached the required hight; then cut out the crown, and the plant will grow bushy; this does not apply to the climbers. The Chapter on Pruning treats more especially on this subject, but I direct attention to it now, as this is the most important time.

CHAPTER XXIII.

MANURES AND FERTILIZERS.

Experience has demonstrated that good, well-rotted cow manure is, in all cases, the best for house-plants. Water can be placed on the manure, and the liquid thus obtained can be used to good advantage in watering the plants. But if Fertilizers are used, be very careful to apply but a little at a time as here directed, and then use them very weak. For beds or soil, always mix the fertilizer well with sand before using. In watering plants with a liquid fertilizer, be sparing and do not use it too frequently. The best way to apply Peruvian Guano to plants in pots is, to add one heaped tablespoonful of pulverized Guano to a gallon of water. Use about one-sixth of a pint (equal

to four tablespoonfuls) of this solution to quick-growing, succulent plants, in about 5-inch pots. For larger pots apply more, and for smaller ones less, and not oftener than once in ten to fourteen days. The water should stand in contact with the Guano six or eight hours, occasionally stirring it, before using. It should be applied at evenings, upon the soil in the pot, and not upon the foilage, which should not be spattered with the solution.

Soluble Pacific Guano so far is but little known to our florists and nurserymen. Those who have used it, pronounce it the best fertilizer. This Guano is rich in Bone Phosphate of Lime (in such condition that a large proportion is immediately soluble), Ammonia and Potash, besides other ingredients valuable as food for plants. It is slow in decomposing, and the young, tender fibres of plants are made accustomed by degrees to this stimulant of growth; while in other Guanos, the Ammonia exists in ready formed salts, and works rapidly to the detriment of plants. Soft and hard wooded plants, taken from the propagating bed, should not receive any fertilizing stimulants until their roots are thoroughly established in the pots. This rule holds good for plants after "shifting" or re-potting. When the roots are in working order, commence watering with the Soluble Pacific Guano, in the following proportions:

First week, 4-oz. to the gallon, applied once.
Second " " " " twice.
Third " " " " three times.
Fourth " 6-oz. to the gallon, applied twice.
Fifth " " " " "
Sixth week, 10-oz. to the gallon, applied every other day.

Seventh and eighth weeks, 10-oz. to the gallon, applied once each day.

Ninth and tenth weeks, 16-oz. to the gallon, used freely each day. As the plants advance in vigor, increase the quantity of Guano.

Guy's "Verdurine" is the name of a fertilizer to which I have given a fair test within the last twelve months. I think it most excellent for Flowering-plants, those in Hanging-Baskets, etc., etc.

I planted a Tradescantia this spring in very poor soil in a rustic log; it was fed with this Invigorator, which caused a very rapid growth, as it did in other plants treated in like manner. This "Verdurine," unlike other fertilizers, is free from all disagreeable odors. It gives to plants a deep, natural tint, putting them in a healthy condition, and avoiding the necessity for changing the soil. It contains, in a concentrated form, all the natural constituents of the soil which enter immediately into the growth of the plants.

The method of using it is very simple: take a quart bottle, fill it with tepid water, and add a teaspoonful of the powder. Shake well, and let it stand a day or two, then sprinkle over the surface of the soil enough to make it moderately moist. Use it once every week, so that the plants may have a regular supply of nourishment. It should not be sprinkled on the leaves of the plant, as it is absorbed only through the roots. Do not use too much when the plants are resting. More may be applied to plants when they are in vigorous growth than on slow growing ones.

CHAPTER XXIV.

SUN AND LIGHT.

As a general thing, plants can not have too much sun; most of them may have all they can get. But a few, such as Lycopodiums, etc., do not need so much; indeed if they do not get any, no harm ensues. I have seen fine plants of this kind growing under the benches of the greenhouse, where they received no direct sun,

and but little fresh air. The branches and leaves of plants kept in windows naturally turn toward the sun and light and thus become one-sided. It is a mistake to endeavor to force them to grow otherwise by frequently turning them, as in the continued movement of the plants to follow the light they become not only weakened, but distorted in shape. It is better, therefore, when plants cannot receive a vertical light, to allow them to spread out as inclined, forming one good face or tier of healthy foliage toward the window; to raise well-balanced heads under such circumstances is almost out of the question. Place them as near the glass as possible; of course windows having a southern aspect are the most desirable.

CHAPTER XXV.

WATERING POTS.

It is unimportant as to the style, size, or material Watering Pots are made of. They may be bought ready made in any tin store, or they may be made to order; some recommend one, others another kind. A common one with a spout and rose, (as represented in figure 31,) of any suitable size, is as good as any. If only a few plants are to be watered, a half-gallon pot is large enough, but to water more a larger one will be required. Be careful to have a very fine rose to water seeds and seedlings with, as a coarse one will be apt to wash them out; one a little coarser will be required for general use. The pots may be filled without

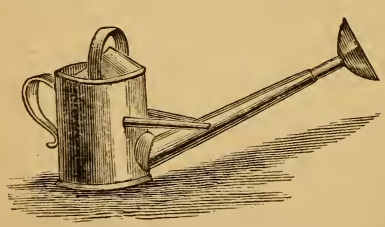

Fig. 31.—WATERING POT.

the rose by pouring the water through the spout until the space above the soil is full. For a conservatory, where you have to reach a great distance, get a pot made with a long spout, as shown in fig. 31, but the spout should not reach more than two inches above the top of the pot. The rose should be flat on top, as shown in the figure, and not convex, as they generally are. This gives one a control of the watering, (only sprinkling where you wish,) while with a convex rose the water is spread out like a fan.

For plants in pots in windows it is well to pack moss about them. The moss will collect all the water which will run from the pots, and helps to retain the moisture. It is, therefore, desirable for use.

CHAPTER XXVI.

FERNERIES OR WARDIAN CASES.

Ferneries or Wardian Cases are used for growing those plants which require a moist atmosphere, a condition which it is impossible to obtain in an ordinary room. The styles are various, and they are made of various materials. Figure 32 represents a square one, made of iron, with a tin or zinc pan. The lid or top can be lifted up to let in fresh air if required. The great advantage possessed by these cases is, that they need be watered but once in one or two months, as the moisture which settles on the glass will return to the soil again. Figure 33 is one made of clay or terra cotta, with a glass bell-shaped shade over it; they can be had also in iron. If moisture collects on the glass, or it "sweats" too much, tilt the shade at one side, and support it so as to hold it up about an inch. Use light soil, mostly leaf mould, to fill it; then place in the plants as taste may suggest, but do not

Fig. 32.—WARDIAN CASE OF IRON.

crowd it too full. After putting in the plants, give the soil a good watering, and set the case where it will receive

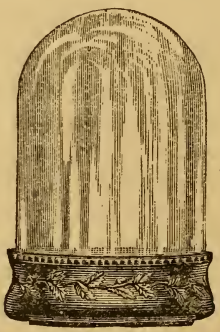

Fig. 33.—TERRA COTTA WARDIAN CASE.

plenty of light, but no sun. As occasion requires, take off the shade, and remove all decayed leaves; if not unnecessarily disturbed, there will be no trouble.

Fig. 35.– IRON PLANT STAND.

CHAPTER XXVII.

PLANT-STANDS.

Plant-stands are of various materials, such as wood, iron, wire, willow-ware, etc. The designs are also numerous; only a few are given here. Figure 34 is made of wood; it folds together, and is very easily shipped; it is a very neat design, and much used. In figure 35 is represented one made of iron, which can also be folded together for shipping. In the top are two zinc pans, so that one can be filled with bulbs, and placed in the cellar until ready to be brought out. Plants can be set out in soil placed in one of the pans, or they may be potted and set, (pots and all,) in the pan, with the spaces between them filled with moss. Treated in this manner, they can be easily moved when the bulbs are ready.

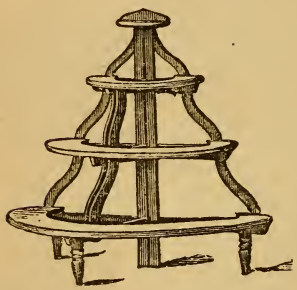

Fig. 34.—FOLDING PLANT STAND.

Stands made of willow or rattan (fig. 36) are very ornamental, and much in use abroad. In some cases they harmonize better with the furniture, and by many they are preferred. It is best to fill them with plants in pots, although they are also provided with a zinc pan. New plants can be easily placed in, instead of the old ones, if they are kept in pots. Some readers may fancy a rustic stand, of which only two of the many designs now made are represented in figures 37 and 38 on page 50. The Rustic Stands are much used in rooms, and also in gardens on the lawns. They are made of wooden boxes, square, round, oval, etc., with Laurel roots and other

materials nailed upon the outside, with the nails clinched on the inside, so that the rustic work can not come off. Plants prosper very well in them.

The Novelty Revolving Flower Stand (fig. 39) is made

Fig. 36.—STAND OF RATTAN OR WILLOW.

of wire, and is very strong, though light. It is so adjusted that it will not tip over when a greater weight is placed upon one side than on the other, while it revolves

easily. It can be easily and perfectly covered, thus avoiding the removal of plants when sweeping. It may be covered, also, to prevent the chilling of the plants in cold nights, making it unnecessary to remove the stand to a

Fig. 37.—RUSTIC PLANT STAND.

Fig. 38.—RUSTIC STAND.

Fig. 39.—NOVELTY REVOLVING STAND.

warmer part of the room. If covered with cloth, the plants can be easily smoked. It is provided with an oil-cloth rimmed mat, capable of holding several quarts of water; wetting the carpet is thus prevented.

CHAPTER XXVIII.

HANGING BASKETS.

Of all Hanging Baskets yet introduced, the Rustic Hanging one, figure 40, has been the most successful in every respect. It is the one most in use, and costs less for its size than any other. In filling a basket, always place some large, showy plant in the center, such as Dracæna, Zonal Geranium, etc. Arrange some climbing plant at each handle, with trailing plants at the edge. Do not fill them too full, or the plants will crowd one another, and some will die.

Fig. 40. RUSTIC BASKET.

The Hanging Flower-Pot Stand, figure 41, is a desirable article, inasmuch as ladies complain that flower-pot stands are so low, they must be at the expense of a table to put them on, in order to raise them high enough in the window to give the plants full benefit of light and sun, and to make the window look well from the outside. This stand may be suspended from the ceiling. It is easily rotated, and there is no table to occupy valuable room. The ring above, is made of malleable iron, and will bear a great weight. This stand, with a few baskets, will fill a bay-window beautifully. The center basin is of clay, glazed on the inside, and may be used to hold a fish-globe, or hanging basket. A similar style is made to hold more pots and to stand on the table if desired. They are very neatly finished.

The Imitation Log Baskets, figure 42, are made of the same material as the common flower pots, and painted in

imitation of a log; therefore it is necessary to be careful not to water them too much.

There are Hanging Baskets made of wire, but these

Fig. 41.—HANGING FLOWER-POT STAND.

must be first lined with green moss, before they can be used. For those who are willing to take this trouble, they are very useful; be careful that the water, in wat-

tering, does not run through upon the carpet. There are, also, various kinds and shapes of Terra Cotta Hanging Baskets, too numerous to mention here. They are all quite good, if care be taken not to water too excessively.

Fig. 42.—LOG BASKET.

CHAPTER XXIX.

TREATMENT OF DUTCH BULBS.

Under this heading, are included the Hyacinth, Tulip, Crocus, Jonquils, Narcissus, Snowdrops, and various others less known, but very pretty kinds. They are all imported from Holland every year, it being the only place where they are successfully propagated ; and thus they derive their name, Dutch Bulbs. The Hyacinth, the best known, will first be treated of.

HYACINTHUS.—*The Hyacinth*, fig. 43. (In mythology, a beautiful boy, who, after being killed, was transformed into this flower). Nat. Ord. *Liliaceae*, the Lily Family.

Hyacinths in Pots.—Hyacinths will grow in almost any light, sandy soil, but where the highest cultivation is aimed at, they should be planted in a mixture composed of one-half decomposed turfy loam, with the remainder of equal parts of well-rotted manure and leaf mould, well mixed together. Use 6-inch pots for a single bulb, or 8-inch pots for three bulbs. If massing is desired, use larger pots. Fill the pot well with soil, then make a hole with

the first two fingers and thumb; insert the bulb in the hole thus made, covering it so that only the upper part may be seen. Press the soil firmly, then give a good watering so as to settle it close to the bulbs. Now plunge in a warm garden border, four inches below the surface, or place them in a cool cellar, and in six weeks or two months, take out and bring them gradually to light and heat. In whatever way Hyacinths may be grown, to insure success, the flower, or rather, the bulb must not be stimulated by light or heat, until the roots are well developed in the pot or glass. If once brought to the light, water them freely, because they prefer it, but not excessively. By stinting them in water while growing, the flowers will be smaller and less brilliant in color. If potted at intervals of a week or two, they will by this means give a succession of blooms for months.

Fig. 43.—HYACINTH.

Growing Hyacinths in Glasses.—In growing Hyacinths in glasses, let the water simply touch the base of the bulb, figure 44, until they have made good roots, then allow the water to be only half an inch from the bulb. Keep them in a cool, dark cellar or closet for at least six or eight weeks after putting the bulbs in the glasses, and remove gradually to light and heat. Hyacinths started in pots can be washed clear of soil, and transplanted or placed in glasses. They are more certain to prosper than if started in water, and should some of the roots be lost or broken in changing, it will be of no material injury to them. A piece of charcoal in the glass, keeps the water sweet. Change it every two weeks, using it not too cold. Should any of the

roots become slimy, wash them well and rinse the glass thoroughly. The single varieties are the best for glasses, and are more effective in flowers.

For growing in glasses, use either of the designs shown in figures 46, 47, or 48 ; only select dark colored glasses, because they are the best for the roots, as they keep off the sun a little or partially shade them.

Hyacinths Grown in Moss.—The Hyacinth is capable of being cultivated in a greater number of ways than almost any other variety of flower. It will grow freely in almost any medium capable of retaining moisture, and will generally produce as fine spikes of blooms when grown in sand, moss, charcoal-siftings, or water, as when planted in the richest compost. Porcelain, Terra Cotta, stone, china vases, glass bowls or dishes, in fact anything that will contain moisture, may be used to advantage, and with gratifying results. Fill the vessel with moss or sand instead of soil, upon which arrange the bulbs in any form your taste may suggest. Then cover with moss, and fill it in between the bulbs also. Now water well and place them in a dark cellar, as already directed, for six or eight weeks. When brought to the light, care must be taken to keep the moss or sand constantly moist.

Fig 44.—HYACINTH IN GLASS.

In figure 45 two Hyacinths are seen growing, one up into the air in the natural way, and one down into the water in the lower glass. The latter, of course, appears magnified by the glass and the water. They are easily grown this way, and are something quite new in this country.

Take the upper Bell or Cup and place a little moss at the base of the bell to keep the soil, if you use soil, from falling through; unless you use all moss or cocoa fibre, which is better. Arrange the bulb in the center, close to the bottom, of course with the base of the bulb upwards, and then fill in with the ingredients you use, placing the other bulb in the usual way, as in ordinary planting. You can then place them in the dark to root, as is customary, and when they are sufficiently developed the upper cup can be placed on the vase, which is filled half-full of water, until the lower stalk is 3 or 4 inches long. Then fill up the water so that it just touches the lower sprout, and the one grows up and the other down. It is much the best to use bulbs of one habit as near as you can, as sometimes one gets ahead of the other, and spoils the appearance. If the water gets dirty change it; a little charcoal added is beneficial. The bulbs may be started in moss in boxes or pots, and transferred to the vase, but do not try to force them by putting them to the light before they are well rooted, and never let the water in the lower vase get too warm, or it will cause the flower to rot. If kept in a cool place they do much better.

Fig. 45.—TWO HYACINTHS IN GLASS.

THE CROCUS (a name adapted from Theophrastus).—Nat. Ord. *Iridaceæ*, the Iris Family. The *Crocus* (fig. 49) is well known as one of our earliest spring flowers,

producing dense masses of richly colored blossoms. The more thickly they are planted, the greater is the effect produced. With ordinary care the Crocus will bloom in

Fig. 46.

Fig. 47.

HYACINTH GLASSES.

Fig. 48.

any sitting-room window. Use good rich soil, and plant from eight to ten in a 6-inch pot. Cover an inch with

Fig. 49.—CROCUSES.

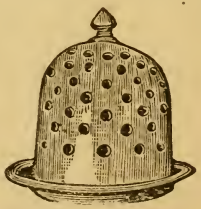

Fig. 50.—BEE HIVE.

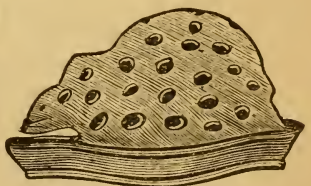

Fig. 51.—HEDGEHOG.

soil, and water well. They need not be placed in the dark, but put them wherever it is convenient until they begin to sprout. Then let them have plenty of sun,

but not so much water as Hyacinths. They can be planted on the edge of a 7-inch pot with one or two Hyacinths in the center. They can also be grown in the Beehive (figure 50), or the Hedgehog pot (figure 51). Fill the lowest row of holes after turning it up, then fill up with soil to the next row of holes; then another row of holes, and soil again, and so on, until full; lastly, cover the lower part with moss. Water well, and treat as above.

TULIPS.—The Tulip—*Tulipa*—(figs. 52 and 53)—from its Persian name, *Thoulyban*—Nat. Ord. *Liliaceæ*, the Lily Family. For the ornamentation of the conservatory, parlor, or sitting-room during the winter and spring months, the Tulip stands unrivalled, both as regards its rich and various colors, easy culture, and accommodating habits. Like the Hyacinth, it will thrive in almost any soil and situation, and under almost any circumstances, so that its claim to universal cultivation is equal to that of the Hyacinth, Crocus, Narcissus, etc. It may be planted in rich soil in 3 or 4-inch pots, or with Hyacinths in the center, Tulips next, and a row or more of Crocuses on the margin. In large pots, cover the bulb with soil, water well, and treat same as Cro-

Fig. 52.—TULIP.

Fig. 53.—PARROT TULIP.

cuses. Figure 53 represents the Parrot Tulip, which is by far the finest in color, etc.

NARCISSUS.—Narcissus (fig. 54) from *narke*, stupor; on account of the effects produced upon the nerves by the odor. Nat. Ord. *Amaryllidaceæ*, the Amaryllids. In importance, the Narcissus ranks next to the Hyacinth. It is very fragrant, and can be grown the same as the Hyacinth, in pots. They can also be planted in large pots with Hyacinths, Tulips, Crocuses, etc., around them, and thus make a very handsome show.

SNOWDROPS.—*Galanthus*, Linn. The Snowdrop (from gala, milk, and anthus, a flower;) alluding to the milk-white flowers. Nat. Ord. *Amaryllidaceæ*. This little bulb is universally admired for its elegant milk-white drooping blossoms. It succeeds, like the Crocus, in any soil, in pots, and like that, can be massed to advantage with other flowering bulbs. These, as well as all fall or winter bulbs, are very hardy; therefore let them become used to a low temperature, say 40° at night, with a variation of 15° to 20° in the day time. If they can be given more heat at night than 40°, it does them no harm, but if a higher temperature can not be kept up every night, do not commence it in the beginning, else you are sure of failure. Do not force them, or any other winter-flowering bulb, too much, else you will rob them of their beauty, and have imperfectly shaped and weak-colored flowers.

Fig. 54.—NARCISSUS.

CHAPTER XXX.

LIST OF PLANTS FOR THE WINDOW OR ROOM.

It is not advisable to buy flowers from a vender, or at street stands. They generally have plants which have been much abused, and consequently have been bought cheap from some florist. The leaves of a healthy plant are of a fine green. If they are in bloom or not, it does not matter. Plants which are intended for the spring sale, as a rule, have been forced to bloom, and are, therefore, not as good as those which have not been thus treated, since forcing weakens them more or less. If plants offered by street stands or venders are in a healthy condition, of course it is all right. But, as a rule, they have been hawked through the streets for days, having been allowed to wilt and get full of dust; or else they have been on the side-walk for weeks, even months, and are literally covered with dust. Seeds bought from such venders are not reliable, because they generally sell anything, and do not know what they are selling. Do not deal with them in any way, but go to some reliable store and make your selection; even if the seeds may cost more, they will be cheaper in the end. If after you have bought your plants, any are in flower and not healthy and strong, cut them off, so as to make good, vigorous plants, because the bloom or flower takes as much nourishment out of the plant, as the leaves themselves; if there is not enough nourishment for the leaves, how can you expect to nourish the bloom. If you wish plants to flower in the winter, you must not allow them to bloom in the summer; and to prevent them from so doing you must cut the buds off just as fast as they appear. When the time has come for them to flower, stop cutting off the buds.

LIST OF WINTER-FLOWERING PLANTS.

Abbreviations: *H*, Hardy; *H, H*, Half-Hardy; *T*, Tender.

Ardisia, *H*	Cinerarias, *T*
Azaleas, *H*	Dianthus, *H, H*
Begonia, *T*	Geranium, Zonal, *H*
Bouvardias, *T*	" Scented, *H, H*
Callas, *T*	Heliotropes, *T*
Camellias, *H, H*	Oxalis, *H, H*
Carnations, *H*	Primroses, *T*
Cyclamen, *H*	Violets, *H*

List of plants useful for the window, having fancy colored leaves and generally no showy flowers:

Anthericums, *H, H, S*	Isolepis, *H, S*
Aspidistra, *H, H, S*	Canna, *H, H, S*
Begonia Rex, *T, S*	Lycopods, *H, H, S*
Centaureas, *T, S*	Maranta, *T, S*
Echeveria, *T*	Pandanus, *T, S*
Ferns, *H, H, S*	Palms, *T, S*
" Climbing, *H, H, S*	Rubber Plants, *H, H, S*
Ivy, German, *T*	Saxifraga, *H, H, S*
" English, *S*	Tradescantia, *H, H, S*

Those marked *S*, will do well in a shady window.

In addition to these, there are many more plants that can be used for the window, and made to bloom in the winter, if not allowed to bloom in the summer. There are also many which can be grown from seed and will bloom in the winter or summer, as desired.

CHAPTER XXXI.

GENERAL RULES FOR THE CULTURE OF WINTER PLANTS.

CULTURE OF HARDY PLANTS.—Hardy plants are those that will stand a great deal of cold, and these plants will do better in a cool than warm temperature. Therefore, let the temperature be about 45° to 55° in the day, with 10° less at night. Use rich soil in all cases, and water as directed in the Chapter on Watering, except where special directions for watering them be given.

HALF-HARDY PLANTS.—This class of plants requires more heat than the preceding; say 50° to 60°, with 10° to 15° less at night. The culture otherwise, is the same.

TENDER PLANTS.—In cultivating the plants placed in this line, great care should be taken, because the majority of them will turn black if any cold wind or frost should strike them, and some must not be watered too much, if they have not enough heat. Use rich, light soil, and cultivate in the usual way, with a temperature of 55° to 70° in the day, and about 10° to 15° less at night. These names, Hardy, Half-Hardy, and Tender, are used to distinguish them, and to give an idea where to place them in the window or conservatory.

The first list includes such plants as are used for flowering during the winter. In some cases they can also be employed in Vases, Hanging-Baskets, etc.; but they are mostly grown as pot plants.

The second list contains plants which are best adapted for Plant-Stands, Hanging-Baskets, etc. But these, with few exceptions, are used for their beautiful foliage and not for flowering, as there are but a few which flower, and the bloom of these amount to but little.

CHAPTER XXXII.

SHORT DESCRIPTION OF WINTER FLOWERING PLANTS.

ARDISIA.—From *ardis*, spear-head, the hard wood being used for spear-heads. Nat. Ord. *Myrsinaceae*. Summer temperature, 60° to 70°; winter, 48° to 55°. The Ardisia, with its dark green foliage and bright red berries, forms a splendid plant for house decorations. The flowers are quite small, and do not last very long. Afterwards, the berries appear, first of a green color, and then turning dark blood-red, and remain on the plant

all winter until spring, when they should be pulled off. It is a fine specimen for Jardinières, or the centre of a table. There is also a variety with white berries.

AZALEA.—From the Greek for *arid*, having no special reference to the plant. Nat. Ord. *Ericaceæ*, the Heath Family. Summer temperature, 60° to 70°; winter, 45° to 55°, and lower if for late blooming. A very showy plant when in bloom, and hardy. It must be grown in light leaf mould and sandy soils, can be placed in a shady place in summer, and requires but little water, and only when dry. It ought to be well sprinkled.

BEGONIA, named in honor of *Michel Begon*, Governor of St. Domingo, about two hundred years ago. Nat. Ord. *Begoniaceæ*. Summer temperature, 60° to 70°; winter,

Fig. 55.—BEGONIA MULTIFLORA.

40° to 60°. The Begonias were introduced in 1777, from Jamaica. All the species of Begonia are interesting and beautiful ornaments in the greenhouse or parlor in win-

ter. The graceful, pendulous flowers of these plants renders them most desirable, but with the added beauty of their glossy, waxen foliage, they are simply superb. Several tuberous-rooted species have recently been introduced. They have large, showy flowers and succeed well in a moist, half-shady place. We have not the space here to give an extended description of them, but shall mention the two most easily cultivated in the room or window.

Begonia multiflora, figure 55, has large pink flowers, and is of easy culture in the house. It is covered with a profusion of flowers. It does best in a cool place, with plenty of sun to make it bloom well. The Begonias must be sprinkled three or four times a week to prevent insects from infesting them. I have seen a specimen plant of this variety grown by a lady in her room, that would give credit to any florist had he grown it.

Begonia glaucophylla scandens. See figure 56. This is a drooping or creeping species, with light green, glossy leaves, and large clusters of orange salmon-colored flowers. For growing in hanging baskets, this species will be looked for and greatly esteemed, as it droops beautifully over the sides, as shown in figure 56, and when in bloom there is no prettier object. This, like nearly all Begonias, is propagated by either cuttings or seeds, and they do well in a light, rich soil.

In preparing a hanging basket, select one of the rustic imitation log baskets, and put a Begonia on each side and some graceful plant, such as a Dracæna, in the center.

Bouvardia.—(In memory of *Dr. Bouvard*, Superintendent of the Royal Palace Botanic Garden). Nat. Ord. *Rubiaceæ*, the Madder Family. Summer temperature, 50° to 70°; winter, 35° to 45°. These are among the most important plants cultivated for winter flowering. The form of the flower is star-shaped, its colors, white, pink, blush, and crimson. They do well in cool places with plenty of sun to make them bloom well. They must be

Fig. 56.—BEGONIA GLAUCOPHYLLIS SCANDENS.

sprinkled three or four times a week, to prevent insects from infesting them.

CALLA.—See RICHARDIA.

CAMELLIAS.—*Camellia*, named in honor of a missionary to China, *G. Kamel*, or *Camellus*. Nat. Ord. *Ternstrœmiaceæ*—the Tea Family. Summer temperature,

Fig. 57.—CANNAS.

50° to 70°; winter, 35° to 45°. All the Camellias are universally admired by every collector of plants, on account of their beautiful rose-like flowers and elegant dark-green,

shining, laurel-like leaves. They are very hardy greenhouse plants and are of easy culture, requiring only to be sheltered from severe frost. The best soil for them is an equal quantity of good sandy loam and peat. But some of the best Camellia growers have found that simple light loam alone answers their needs very well. The pots should be well drained with pieces of potsherds, that the roots may not get soddened with too much water, as nothing injures them more than over-watering, particularly when they are not in a growing state. When growing freely, they can scarcely have too much water, and they should be syringed, over the leaves, with fresh water daily. They must be shaded in the summer from the full effect of the sun, and need to be potted but once in the season. Do not use any guano or other strong fertilizers, as they do not require it.

CANNA.—*Canna* (Indian Shot), a Celtic name for *Cane*. Nat. Ord. *Marantaceæ*, the Arrowroot Family. Summer temperature, 60° to 80°; winter, 45° to 55°. This is a genus worthy of cultivation in all collections, as its lively flowers are produced in great abundance and at all seasons; many species are now in our collections; and a rich light soil suits all of them best. They are propagated by divisions of the roots or by seeds, which they produce in abundance. Figure 57 represents a plant grown from one root.

CARNATION. — *Dianthus Caryophyllus* (Carnation). The name is from the Greek, meaning Jove's own flower. Nat. Ord. *Caryophyllaceæ*, the Pink Family. A truly beautiful and ornamental genus, containing some of the most prized flowers we possess, on account of their beauty and fragrance, which make them indispensable for decorating the conservatory or parlor window in winter. The varieties are very numerous with colors from white, pink, maroon, crimson, scarlet, yellow-striped, etc. Keep them in a very cool place, not over 50° to 60°.

CYCLAMEN.—*Cyclamen* (Alpine Violet and Sow Bread). A classical name. Nat. Ord. *Primulaceæ*. The colors white and shades of crimson. As a winter blooming plant for a conservatory or parlor window, it is invaluable; with some the leaves are strikingly variegated, and the flowers are unique and beautiful. As it has a large bulb, care must be taken to save this in the summer. After the leaves have dropped off, let them have a few months rest, and later on start them into growth in a rich light soil, giving a plenty of sun and little water when needed. The bulb will bloom every winter if taken care of. Do not give it too much heat, about 50° being sufficient, and they will bloom better and produce more flowers than when they are kept too warm.

Fig. 58.—CYCLAMEN.

GERANIUMS (Zonal).—*Pelargonium* (Geranium), from the Greek word for *Stork*, from a resemblance of the pointed fruit to the beak of a bird. Nat. Ord. *Geraniacæ*, the Geranium Family. The greenhouse species, though popularly called Geranium, belong to the genus *Pelargonium*, the plants belonging to the genus *Geranium* are herbs. The Geranium is too well known to need a lengthy description. The colors of the flowers are various shades of white, blush, pink, scarlet, crimson, salmon or Indian yellow, etc. The leaves are green, with a bronzy zone or mark close to the edge. The Geranium does well in almost any soil. It requires plenty

of fresh air and can be kept in a warm place, but it thrives best in a room of a regular moderate temperature of about 50° to 60°, well sprinkled and aired to make stocky plants, otherwise they will have rank, slim, long stalks, with leaves here and there. It does well for the center of baskets, vases, etc., but not for ferneries. They can be grown easily from seeds, and they will often give new varieties by so increasing them. They can also be easily raised from cuttings.

Scented Geranium.—As every one knows the Rose Geranium, it is needless to describe it. These are all species of *Pelargonium,* and are popularly known as Lemon, Apple, Peppermint, etc., scented Geraniums, for which consult the catalogue of some florist. The culture is the same as for Zonal Geraniums.

Heliotropes.—*Heliotropium* (Heliotrope), from the Greek, meaning, turning to the sun. Nat. Ord. *Borraginaceæ,* the Borage Family. This plant is a universal favorite on account of its sweet fragrance. It is of easy culture, and will afford sweet scented blooms during winter. The light blush violet and lilac varieties are the most fragrant. The darker kinds are not so much so. The culture is about the same as for Geranium ; but they require more heat, say 60° to 65°, and do not like to have the cold air strike them, as this will turn the flowers and leaves black.

Oxalis.—Sorrel (name from *oxys,* sharp, referring to the acid taste of the leaves). Nat. ord., *Oxalidaceæ.* This genus comprises a great number of species, differing in their habits and manner of growth, but we find the three we have selected the best for window gardening, being bulbous species.

Oxalis Boweii, figure 59, is decidedly the best and handsomest of them all. The flowers are large, of a most brilliant crimson color, and produced in the greatest profusion, if planted in pots, or better still, in small

earthen hanging baskets, say about six bulbs in a six-inch basket. They will cover the entire surface with a mass of leaves, much like those of the common Red Clover, but larger, with from five to ten clusters of four to ten flowers each, and rising about six inches above the foliage.

Oxalis alba, a white kind, with leaves and flowers much smaller than the foregoing; it is also a very profuse bloomer. It does best in pots; it will also do well in baskets, stands, vases, etc., planted at the edge, where it will cover them quickly with a growth of small leaves, like those of White Clover.

Oxalis floribunda rosea, a rose-colored variety, much like *alba,* by some called *multiflora,* it being very free-blooming. It is of a sort of rose, or lilac rose color, with a yellow center or eye. There are many varieties of *Oxalis rosea,* and this particular one is very hard to get from large bulb-houses, and when it is asked for, you may be given any of the others but of this one, for this reason, I take care of all my small bulbs and sell the large ones only. There is another Oxalis, called *Oxalis lutea,* a yellow flowering species, very good for large stands or baskets, but I do not think much of it for small work. It is a native of the Cape of Good Hope, with long, slender, flowering stalks, sometimes ten to fourteen inches long, with clusters of golden yellow flowers on long slender scapes. These are liable to be broken off,

Fig. 59.—OXALIS BOWEII.

and for this reason I do not prize it highly. All the species under cultivation are either from the Cape of Good Hope or South America, and they are all easy of cultivation. Give them a place where they can have sun and shade, and light, rich soil, and water freely.

RICHARDIA, also often called CALLA.—Named in honor of *L. C. Richard*, a French botanist. Nat. Ord. *Araceæ*, the Arum Family. The well known white Calla Lily needs no description, as it is so well known. It does well in any rich soil. If you wish them to bloom freely, do not give them water in excess, but enough; if you wish an abundance of fine green leaves, let them have plenty of water. They should also be sprinkled often, to keep the green-fly from infesting them, the latter prefer these leaves above all others, as they are succulent. In spring, after they have bloomed all winter, lay the pots on the side in the shade and do not water them, so that they can have a rest for one or two months. Then set them up again and water sparingly until they start to grow; re-pot them, water often, and they will bloom again during the coming winter.

SAXIFRAGA.—Saxifrage, from *Saxum*, a stone, and *frango*, to break. Some formerly had reputed medicinal qualities in some diseases. Nat. Ord. *Saxifragaceæ*. In this very extensive genus, numbering more than a hundred and fifty species, we have very beautiful hardy perennials, admirably adapted for rock work or rough borders, but our summers are too hot for the majority of the Alpine species. The one most generally cultivated as a window plant is the Creeping Saxifrage, *Saxifraga sarmentosa*, figure 60. The number of its common names is evidence of its popularity. It is known as "Beef-steak Geranium," "Strawberry Geranium," because of its Strawberry-like runners, a "Thousand to One," and by various other names. Its manner of growth well adapts it for the edges of baskets and window boxes. It puts

forth a long stem like a Strawberry runner, but much more slender, at the end of which a little plant appears, as shown in figure 60. In time this plant produces another, and so on. These offsets readily take root, sometimes even in the air, hanging down from the basket, thus allowing the rapid multiplication of the plant. The roundish, hairy leaves are handsomely variegated, and the large cluster of small pinkish-white flowers, though not very showy, is pleasing. It will grow in almost any soil, and does best in a cool, moist situation. In 1870, *Saxifraga sarmentosa variegata* was introduced, being beautifully and more distinctly variegated with white and rose colored markings on the leaves, but it is apt to run back to the original species.

Fig. 60.—SAXAFRAGA SARMENTOSA.

TRADESCANTIA (Spiderwort), named in honor of *Tradescant*, gardener to Charles I. Nat. Ord. *Commelynaceæ*, the Spiderwort Family. Some have bright, glossy-green leaves, some have silvery-white stripes upon a dark-green ground,

and in others the back of the leaves is violet-purple, and the upper side light-green. They are mostly of a drooping or creeping habit, except *T. discolor*, which is used for centers of vases or baskets. The drooping kinds are very ornamental for the edges of baskets, vases, etc. They will do well in any rich soil, are easily raised from slips, and grow well in shady and moist places. The temperature may be kept at about 40° to 45°. The most of them have very small blue flowers, which are of but little consequence.

VIOLETS. — *Viola* (The Violet). The Latin name.

Fig. 61.—VIOLET, MARIA LOUISE.

Nat. Ord. *Violaceæ*, the Violet Family. This is also a very well known flowering plant, of which there are many varieties—white, light and dark blue, single and double. The one most in cultivation with the finest large sweet-scented flowers is V. Marie Louise, which surpasses all other double blue Violets in the profusion of its flowers, richness of color and delicious fragrance. They are hardy and need therefore little heat. Give plenty of fresh air on warm days, and place in a sunny window. When done blooming in spring, replant them in the garden, or grow in pots by dividing the roots, and cultivate as other hardy plants, such as carnations, etc.

PLANTS WITH ORNAMENTAL FOLIAGE.

ANTHERICUM, Linn. Nat. Ord. *Liliaceæ*. *A. vitatum variegatum*. A species of recent introduction from the Cape of Good Hope. It has foliage of a bright grassy green, beautifully striped and margined with creamy white. In variegation and habits it closely resembles *Pandanus Veitchii*, but is of more rapid growth and of more easy cultivation. It has a hardy constitution, not as against cold, but it resists the dry atmosphere and gases of our dwellings, which makes it a valuable plant for the conservatory, and as a specimen plant, in a large pot, or for filling in baskets, Jardinieres, or rustic stands, etc. The method of propagating this species is both interesting and peculiar. Buds or short shoots are formed on the flower stems, which, if put in as cuttings in the ordinary way, take root rapidly. It is also propagated by seed or by division of the roots. By allowing one plant to remain undisturbed, or undivided in a large pot and watered well with a liquid fertilizer, it will make a very beautiful ornament for the center of a large table or a shelf.

ASPIDISTRA.—From *aspidiseon*, a little round shield ; the form of the flower. Nat. Ord. *Liliaceæ*. A small genus found in China and Japan, remarkable for producing their flowers just below the surface of the soil. They are useful house plants ; the foliage of *A. lurida variegata*, which is a very dark green with broad stripes of white, contrasts finely with other plants with ornamental foliage. There is no other plant that I know of that will so well stand the ill-treatment plants receive in the living room or window as this ; we have several which have been in use for the past six years, and to-day are in a perfect condition. Each year they shoot up from five to fifteen new leaves. These are very graceful and are easily kept clean from all kinds of vermin. For the pro-

duction of well marked plants, the pots in which they are grown should be small, and the soil liberally mixed with sand and rotten manure. They are easily propagated by suckers, which, if put into small pots, will not make any new leaves the first year, but about the second and third season they will commence to fill up the pot, when they should be shifted into larger pots as required. They do well in a shady or a sunny window, and for window boxes I know of no plant better adapted.

BEGONIA—For the green-leaved Begonias, see page 63.

BEGONIA REX and its varieties are of the simplest culture in any soil, if allowed an abundant supply of water, and plenty of heat. They will thrive best in a half shady place. They are all large-leaved sorts and the most ornamental of the species. They are best propagated by cutting the leaves in sections, each being so cut as to form a junction of the ribs at the lower end of the cutting. These should be laid in a damp, warm place, or on the propagating bench, with good bottom heat, or a leaf, or a portion of one may be laid flat on the sand of the cutting bench in any shady place in the greenhouse.

There is no other plant that will make a hanging basket, rustic stand, or vase, etc., look nicer and brighter in color, than this handsome "variegated foliage plants." Their markings are something marvelous, and by many are at first sight supposed to be artificial, as they have perfect zones or stripes, around the centre and outside lines of the leaves, like the Zonal Geraniums, and their rich velvety texture with mottled spots seems perfect.

CENTAUREA.—*Centaurea* (Star-Thistle), named after Chiron, the *Centaur*. Nat. Ord. *Compositæ*, the Composite Family. The species of this genus are, for the greater part, ornamental plants, growing from half a foot to several feet high, and are easily grown from seeds. The one best adapted for the winter garden is *C. gymnocarpa*. It attains a diameter of 12 to 18 inches, forming

a graceful rounded clump of silvery gray foliage ; on this account nothing is better fitted to contrast with other plants having a dark foliage. As a plant for hanging-baskets it is also unsurpassed. Will grow well in any good rich soil, with a temperature of 40° to 50°.

Fig. 62.—DRACÆNA AUSTRALIS.

Fig. 63.—DRACÆNA BRASILIENSIS.

DRACÆNAS.—*Dracæna* (Dragon-Tree), from *Drakaina*, a female dragon ; some of the species yield a red gum, called Dragon's Blood. Nat. Ord. *Liliacæ*, the Lily Family. There are many species and varieties of these plants. *D. Brasiliensis* and *D. terminalis* are the most generally cultivated. These handsome ornamental-leaved plants are exceedingly useful for the decoration of the table or for the room ; also for the greenhouse or conservatory. A more graceful plant than *D. australis*, figure 62, with long, narrow leaves, can hardly be found. *D. Brasiliensis*, figure 63, is exceedingly handsome for the center of a vase or stand, forming a beautiful object, with its fine, broad, recurving foliage. It is strikingly

effective for conservatory and greenhouse decoration. Summer temperature, 60° to 80° ; winter, 48° to 55°.

ECHEVERIA.—In honor of M. Echeveria, author of the splendid drawings of the "Flora Mexicana." Nat. Ord. *Crassulaceæ*. The Echeverias are excellent plants, all more or less ornamental, particularly so when in flower. Some are dwarf and herbaceous, and others more or less shrubby in their habit. They are all free growing plants, suitable for rockeries and baskets, and specimen plants in the window. They must be freely supplied with water while growing. The Echeverias are readily propagated by the leaves, especially those produced along the flower stem, and by seeds. They require a very open or porous soil, consisting of loam and coarse sand. They are chiefly natives of Mexico ; some of the more popular kinds are of recent introduction. As this interesting genus of plants has taken a prominent position within the last few years in designing, to produce beautiful effects in carpet bedding, I would advise all who will, to add them to their list of plants. They belong to the same family with the *Sempervivum* or "House Leek," having thick, succulent leaves, and showy bright red and yellow flowers ; the following two are the best :

Echeveria seccunda glauca, and *E. Mexicana*. Botanists now place these plants in the genus *Cotyledon*, but *Echeveria* is too well established as a garden name, to be readily changed.

FERNS.—Hardy ferns are found in various situations, and consequently require different modes of treatment. Some grow on rocks in exposed situations ; others in boggy, moist ground ; some grow in shady woods and in the crevices of rocks, whilst others, again, grow near waterfalls, where the spray keeps them constantly moist. To succeed in cultivating the different ferns all in one place, will require some experience. The best way to grow them is in a Fern Case, figures 32 and 33. In col-

lecting wild ferns, take with them enough of the soil in which they grow in which to plant them; keep them well watered. A few varieties can be grown in pots if desired, but Ferns, like Heaths, if they once get thoroughly dry, will perish, therefore keep them constantly well watered, more especially when the pots are full of

Fig. 64.—BASKET OF FERNS.—HANDLES COVERED WITH "GERMAN IVY."

roots; should any chance to be suffering severely from drouth, take such and stand them for an hour or two in a vessel of water deep enough to cover the top of the pot. This will thoroughly wet every part of the ball of earth, and the plant will often recover. Ferns require a light, open soil. A compost of sandy, fibrous peat two parts, turfy loam one part, and leaf-mould one part, with a free

admixture of sand, will suit them best; temperature about 50°.

Figure 64 gives a fair representation of a Hanging Basket filled with Ferns of various kinds, with the handles covered with German Ivy. These baskets require a great deal of care and attention, and it should never be forgotten to thoroughly water them, as the main requirement if one would have perfectly healthy Ferns. They require a good shower of fresh water through a fine syringe, and this at least once a day, and in hot dry rooms, they ought to have it twice daily.

Ficus.—*Ficus* (the Fig), the ancient name. Nat. Ord. *Urticaccæ*, the Nettle Family. The species mentioned here, *Ficus elastica*, is from the East Indies, and is generally known as the India-Rubber Tree. It produces gum-elastic, but the great supply of commerce comes from other trees, natives of South America. This is a plant of robust and elegant habit, with magnificent, large, glossy dark-green leaves. It is easily cultivated and will thrive well in any light rich soil, or in loam and peat; it will do well in any shady warm place.

Ivy.—*Hedera.* The name appears to be derived from *hedra*, a Celtic word signifying a cord. The English name Ivy is derived from *iva*, a word in the same language, signifying always green. Nat. Ord. *Araliaceæ.*

There are two distinct plants called "Ivy." The "German Ivy" and the "English Ivy," *Hedera Helix.* This last is what is called a rooting climber; that is, its stems climb up trees, walls, sides of dwellings, or any other suitable object, which presents a sufficiently rough surface for their aërial roots to take hold of. As these roots are found all along the stems of the ivy, it is best propagated in a basket filled with good soil. The cuttings are made of the stems, a foot long, and planted in the center of the baskets; thus treated, they take root easily and make an ornament for the window. (See fig.

65). Ivy is also very often employed for covering trellises, the handles of hanging baskets, etc. Ivy does well in any rich soil. It can also be increased by slips taken off and planted where they are to grow. It does well in the shade; the leaves must be frequently sprinkled with fresh water to prevent them from being infested with scale insects, and others. Temperature

Fig. 65.—THE IVY HANGING BASKET.

about 35° to 45°. It will stand out doors during winter, except in very rare cases, or the plants are very young.

LYCOPODIUMS.—*Lycopodium* (Club-Moss), from the Greek for *wolf* and *foot*, from the hairy stems of some species. Most of the greenhouse species, though popularly called Lycopodiums, properly belong to the related genus *Selaginelta*, a diminutive of *Selago*, a species of Lycopodium. Both belong to the Nat. Ord. *Lycopodiaceæ*, the Club-Moss Family. They may be grown in pots, but do best in the Fern Cases, figs. 32 and 33, with Ferns in the center and these around them, to form a green carpet for the Ferns. They are easily propagated

by dividing the plants and re-potting or planting. They require a plentiful supply of moisture, with a turfy loam for their soil, though they will grow in any light loam. They do best if kept in the shade, and at a temperature similar to that for Ferns.

MARANTAS.—*Maranta* (Arrowroot), named after a Venetian botanist, *Maranti*, of the 16th century. Nat. Ord. *Marantaceæ*, the Arrowroot Family. A genus of interesting plants, which grow well in any light, rich soil; they are readily increased by dividing the roots and re-potting them. Summer temperature, 60° to 85°; winter, 50° to 60°. They will do also in the Fern Cases.

PALMS.—Palm Trees, of several genera and species belonging to Nat. Ord. *Palmaceæ*, or Palm Family. The Palms constitute the most noble family in the vegetable kingdom, and afford sufficient diversity of character to allow of selections being made from them for the conservatory or window, to either of which the palms impart a richer tropical appearance than any other plants. Some of the miniature, dwarf-growing kinds are, from their light and graceful forms, admirably adapted for table decoration, for vases, or for almost any purpose where ornamental plants are desired. They are mostly natives of tropical countries, and their products are various and important. They, as a general thing, require a plenty of heat and a good rich soil, and need to be frequently sprinkled with water.

PANDANUS.—*Pandanus utilis* (Screw Pine.) From *pandang*, a word in the Malay language signifying *conspicuous*. Nat. Ord. *Pandanaceæ*. This is an exceedingly ornamental genus, and is very common in the East Indian Islands. The leaves are imbricated, and embrace the stem, bearing some resemblance to the Pine-apple. The leaves are from three to five feet long, and grow in three spiral rows around the extremities of the branches. To support the great weight at the top of the

plant, as the large leaves grow, nature has endowed the plant with the ability to prop itself up by means of aërial roots, which grow out from the side of the trunk at an angle suitable for its support. Without these it would become top-heavy from the accumulation of the large fleshy leaves; but it takes many years for it to attain this enormous growth. *Pandanus utilis* is the

Fig. 66.—PANDANUS UTILIS.

species most frequently met with in our greenhouses, and is, perhaps, the most valuable of any plant used in decoration, as it withstands gas, dust, and general ill usage better than almost any other known plant. It is most useful in its native country, the Mauritius, where it not only grows wild, but is cultivated for its leaves, from which bags or sacks for the export of sugar are manufactured. They are grown from the seed, or from cuttings, the former method being the most common.

We have also the *Pandanus Javanicus variegatus*, and *Pandanus Veitchii*. Both with striped green and white foliage. The best temperature for these is 60° or 70°.

CHAPTER XXXIII.

FLOWERS THAT WILL GROW FROM SEED.

The names here given are those of plants best known to every lover of flowers. As I have but little space for the long list of Flowers which can be grown from seeds, I would recommend the reader to consult any first class seed catalogue for a more extended number. Nothing is more important in raising flowers from seeds than to sow them at the proper depth; therefore follow the directions given in Chap. XXII. All flowering plants are divided by florists into three principal classes, and each class is again subdivided into three more, as shown in the following table, with the letters which are used to designate them:

	1. A. ANNUALS.		2. B. BIENNIALS		3. P. PERENNIALS.	
1	*T. A.*	Tender annual.	*T. B.*	Tender biennial.	*T. P*	Tender perennial.
2	*H. H. A.*	Half hardy annual.	*H. H. B.*	Half hardy biennial.	*H. H. P.*	Half hardy perennial.
3	*H. A*	Hardy annual.	*H. B*	Hardy biennial	*H P.*	Hardy perennial.

The word "Annual" is given to those plants which are sown in the spring, bloom and ripen their seed in the same year, and soon after perish. A few perennials that flower the first year, like the Marvel of Peru, etc., are included here among annuals, but they are only annuals as regards treatment. In cultivating annuals observe under which division they come. Those called hardy annuals do not require much heat to either germinate them or to make them grow well—say about 40° to 45°, while half-hardy, annuals are those that require a little more heat—

say 10° to 15° more. The tender annuals are those that require from 20° to 30° more heat than either.

Biennials are those plants that generally do not bloom until the second year after sowing the seed, and after blooming die. These are again subdivided into tender, half-hardy, and hardy, each division requiring the temperatures named above.

Perennials are plants which do not generally bloom until the second year, but continue to grow and bloom for an indefinite number of years in succession, and may be propagated, after they are once obtained from seed, by division of the roots. They generally grow more vigorously and flower better if divided, and replanted every three or four years. New varieties can only be obtained from seeds.

ABRONIA.—From the Greek word meaning *delicate.* Nat. Ord. *Nyctaginaceæ,* the Four O'Clock Family. *H. H. A.,* about 6 inches high. *Abronia umbellata* is the most common ; this and others are pretty trailing or creeping plants, with verbena-like heads of sweet-scented flowers; colors white, rosy-lilac, and red. They are natives of California, though they were cultivated in England in 1823.

ACROCLINIUM.—The name from the Greek for *high* and *bed,* having reference to the receptacle upon which the florets are placed. Nat. Ord. *Compositæ,* the Composite Family. *H. H. A.,* about 1 foot. A genus of beautiful "everlasting" flowers, natives of South-west Australia, and requiring the same treatment as other half-hardy annuals; colors rose and white, with yellow center or disk. First introduced in 1855.

AGERATUM.—An ancient Greek name signifying *not growing old,* and probably originally applied to some of the "Everlastings." Nat. Ord. same as the preceding. *H. H. A.,* 12 to 18 inches. The species are ornamental, growing freely in light rich soil, and are profuse bloom-

ers of various shades of blue and lavender to white. They are natives of various countries, W. Ind., Am., Peru, Mexico, etc. First introduced in 1714.

ALYSSUM, SWEET. — The name means *to allay rage*, as it was in ancient times supposed to be a remedy for hydrophobia. Nat. Ord. *Cruciferæ*, the Mustard Family. *H. A.*, 6 to 8 inches. *Alyssum maritimum* is a neat and interesting species, well adapted for ornamenting rock-work, or the front of plant stands. It is a very profuse bloomer, lasting all winter or all summer, as desired ; it will grow well in any common soil. This species, which has white, sweet-scented flowers, was introduced in 1700. Another, *A. saxatile*, has yellow flowers.

BEGONIA (Flowering Kinds.) — Named in honor of *M. Begon*, Governor of St. Domingo some 200 years ago. Nat. Ord. *Begoniaceæ*, the Begonia Family. *T. P.*, 12 to 18 inches. These plants are much used for winter flowering, being very profuse bloomers. Some are erect, while others hang over the edges of baskets, etc. The flowers generally hang or droop like those of the Fuchsias ; colors of different shades, from white to bright scarlet ; they succeed best in rich light soil. They were introduced in 1777 from Jamaica.

CANDYTUFT.—*Iberis*, so named from *Iberia*, an old name for Spain. Nat. Ord. *Cruciferæ*, the Mustard Family. *H. A.*, about 1 foot. The species are all very pretty and of easy culture. They are well known in our gardens, where they are very effective and beautiful hardy annuals, blooming as freely as Sweet Alyssum. They are fine for pot culture. They are natives of various European countries, and first cultivated in 1596. Colors white, purple, and crimson.

CANNA.—(See page 66, fig. 57.) *H. H. P.*, 2 to 6 feet. These can be sown in winter and grown in pots for planting out when the weather gets warm, or else they may be grown in pots and plunged in the ground in the

summer for winter use. Of various colors. Soak the seed for 24 hours previous to sowing, in luke-warm water.

CANARY-BIRD FLOWER.—A species of *Tropæolum*, from the Greek word for *trophy*. Nat. Ord. *Geraniaceæ*, the Geranium Family. *H. H. A.*, Climber. This species of *Tropæolum*, *T. peregrinum*, is an exceedingly ornamental climber, with bright yellow-fringed flowers, and neat, finely-divided foliage; very pleasing and useful for climbing at the sides of windows. It grows easily from seed and also from cuttings, in any rich light soil; flowers yellow, with some resemblance in form to a bird.

CARNATION.—(See page 67.) *H. P.*, 1 to 2 feet. The Carnation, if sown in the room or window in winter in boxes, and when large enough, potted into small pots, can be planted in the garden early in the spring, and will bloom that summer. Or else cut off the flowers, plunge in pots in the beds, and use the plants in fall for winter flowering. Colors, various.

CENTAUREA.—(See page 75.) *Centaurea candidissima* and others will make fine plants if grown from seed. It is very difficult for amateurs to propagate them from cuttings or slips.

DIANTHUS.—Both Carnations (see page 67) and Pinks belong to the genus *Dianthus* (from the Greek meaning *Jove's Flower*). Nat. Ord. *Caryophyllaceæ*, the Pink Family. *H. A.* and *H. P.*, 1 foot. This genus embraces some very popular flowers, which bloom freely and are much used for bouquets. They deserve a place in the window. If raised from seed, and the flowers are clipped off, the plants may be used for bedding in the garden. Chinese Pinks, so well known, belong to this genus. First introduced in 1573. Flowers of various colors.

GERANIUMS (see page 68).—These popular plants are indispensable to every garden, but are more admired as pot plants. Propagating from seed is the only way to

obtain new and superior varieties. The seed may be sown at any time during the year, but the best seasons are March and September. Sow in pans or boxes filled with a mixture of good loam, leaf mould, and sand, or street sweepings, covering the seed thinly. Colors various.

Ice Plant.—This belongs to the genus *Mesembryanthemum* (from the Greek words meaning *Mid-day flower*). Nat. Ord. *Mesembryanthemeæ*, the Fig-Marigold Family. This is a very large genus, one species of which, *M. crystallinum*, is called the Ice Plant, as its trailing stems and its leaves are covered with little crystalline swellings or excrescences, giving the plant the appearance of being covered with a film of ice. It grows well in any light, rich soil. From Greece, in 1775.

Ipomœa.—*Ipomœa coccinia*, a name made from the Greek words meaning *resembling Bindweed.* Nat. Ord. *Convolvulaceæ*, the Morning-Glory Family. A large genus, the species here referred to being *I. coccinia*, the Star Ipomœa, a most beautiful climber, and well adapted for the window, for columns, and also for trellis-work, where its beautiful, bright scarlet flowers make a lovely appearance. It thrives in loam and peat, mixed with a little manure. *T. A.* Native East Indies, 1823.

Lobelia.—Named in honor of *M. Lobel*, a herbalist of the 17th century. Nat. Ord. *Lobeliaceæ*, the Lobelia Family. The genus includes both annuals and perennials. The common greenhouse Lobelias are referred to here, and are mainly derived from *L. Erinus*, a native of the Cape of Good Hope. It is an annual, which may be continued by cuttings like a perennial. About 6 inches high. Very beautiful, mostly dwarf-growing plants; their delicate drooping habit, and the profusion of their charming little blue and white flowers, rendering them exceedingly ornamental for Vases or Hanging-Baskets.

Mignonette.—*Reseda*, from *resedo*, to assuage, the

ancients regarding it as medicinal. Nat. Ord. *Resedaceæ*, the Mignonette Family. The Mignonette, *R. odorata*, is an old and universal favorite, on account of the very delightful fragrance which its flowers so freely give off. If well thinned out, the plants will grow stronger and produce larger spikes of blooms than when crowded. Set out from four to six small plants in a 4 or 5-inch pot for the window, and cut off the first flowering stalk, in order to make the plants strong and bushy. It was first introduced from Italy, in 1752.

NASTURTIUMS, TALL.—*Tropæolum majus* (see Canary-Bird Flower, page 86). *H. A.*, Climber. The many varieties will do well in any sandy soil not over rich, and are very ornamental for climbing up the sides of windows. Cut the main runner if it grows too long, which will cause the plants to branch more freely. Remove all flowers as they fade to make them bloom better.

NASTURTIUMS, DWARF.—*Tropæolum minus* (see the preceding). *H. A.*, 1 foot. The numerous varieties are very pretty and free blooming plants of dwarf habit, and therefore well adapted for Hanging-Baskets, Stands, and Vases, which they beautify by hanging down the sides and covering them with a mass of light-green leaves and beautiful bright flowers. The flowers are white, yellow, orange, crimson, and scarlet; some have a combination of two or more colors, and some have darker leaves. Give them plenty of sun, and treat the same as the tall kinds. If any variety is raised from seed that is particularly desirable, it can be propagated easily from slips or cuttings.

NEMOPHILA.—From the Greek words meaning *grove* and *to love;* hence the plants are sometimes called Love-grove. Nat. Ord. *Hydrophyllaceæ*, the Waterleaf Family. *H. A.*, 1 foot. This is a genus of very pretty annuals, all of which are well worth cultivating. They grow and flower best in a moist, shaded situation, and in a peaty

or vegetable soil. They are of a very neat, compact, uniform habit of growth, and comprise varied and beautiful colors. They bloom freely, and are well adapted for Baskets, Vases, or Stands.

PANSY.— *Viola tricolor* (see Violet, page 73), also called Heartsease, and by several other names. *H. P.*, 6 inches. This lovely flower, a favorite with every one, is too well known to need any description. Nothing can be more effective. It is admirably adapted for pot culture, for the decoration of the conservatory or window during the winter and spring months; but the flowers dwindle in size as the warm weather appears. It is best to keep the plants in a cool place, with plenty of sun. Seeds sown in spring should be prevented from blossoming until late in the fall, by picking off the buds as fast as they appear during the summer months. This will cause the plants to grow bushy and compact, and they will bloom profusely during the late autumn and early spring months. Grow in pots, as shown in Chapter XVIII. Seeds sown in August or September, and the plants kept in a cool place in the window all winter, can be planted in the garden in the spring, and will bloom freely the whole spring until hot weather.

PETUNIA.—The Brazilian name for Tobacco is *Petun;* applied to this genus because of its affinity with Tobacco. There is scarcely a genus of plants to equal the Petunia. The plants bloom freely, and are of the easiest culture. Being very effective and beautiful when grown in pots, they are well adapted for decorating the window or conservatory. Sow as directed in Chapter XXII., and pot singly in small pots; re-pot as needed. Pinch off the leading stem to make the plants more bushy. The single Striped and Blotched varieties bloom more freely and have finer colors than the double. For winter use, sow in June and cultivate all summer, as directed in

Chapter XVIII. They will thrive in any good, rich soil, and should have plenty of sun.

PRIMULA, PRIMROSE.—From *primus*, the first, in reference to the early flowering of the plants. Nat. Ord. *Primulaceæ*, the Primrose Family. *T. P.*, 6 to 8 inches. The genus is a large one. The Primulas most common in greenhouse and window culture are varieties of *P. Sinensis*, the Chinese Primrose. These charming plants may be brought to the highest perfection by the simplest means. It is a great point to give them a long period of growth before allowing them to flower. Hence they should never be subjected to a forcing temperature, and, in fact, should be treated as nearly hardy, though they should have ample protection against frost, dampness, and cutting winds. In order to enjoy the bloom of these Primulas for a long period, make at least two sowings of seed, the first in March, and the second in May to July. Sow in a rich, fine, light soil, and cover with a mere dusting of fine earth, and every seed will germinate. If buried deeply, much will be lost. It is best to sow the seed in shallow boxes, instead of seed pans, as those absorb the moisture from the soil around the edge, and if the seeds once get dry after they have been soaked through, they will never vegetate. When large enough, transplant in small pots, and re-pot as needed. Always use light soil, mixed with sand, leaf mould, and street sweepings. The seeds take some time to germinate, and after once repotting all that are up, you will later on find that more are coming. There are many varieties, of which *fimbriata alba*, white, and *fimbriata rubra*, red, or rose, are the best.

SWEET WILLIAM.—*Dianthus barbatus* (see Carnation, page 67). *H. P.*, 18 inches. Very beautiful plants, of extreme richness and diversity of colors. Sow the seed in the summer in shallow boxes, and grow in pots, as directed in Chapter XVIII., or sow them in boxes in the window, and grow them in small pots. Plant in the

garden border, and they will bloom the first season, which, otherwise, like most other perennials, they will not do if not started in the winter. They are perfectly hardy, and need only a slight covering out-doors for the winter.

STOCKS—TEN WEEKS.—*Matthiola*, named in honor of an Italian naturalist, *Matthioli*. Nat. Ord. *Cruciferae*, the Mustard Family. *H. A.*, 1 foot. Stocks may be sown at almost any time, in fact in every month of the year. For early winter blooming in pots, sow the seed in August and September, and re-pot as needed, bearing in mind that they are nearly hardy. For a grand bed of Stocks and an early bloom, sow in February and plant them out when the weather is settled.

THUNBERGIA. — Named in honor of *Thunberg*, a Swedish botanist. Nat. Ord. *Acanthaceae*, the Acanthus Family. *T. A.*, Climber. *Thunbergia alata*, with its many varieties, is a very ornamental, free-blooming climber, of rapid growth, handsome foliage, and much-admired flowers. It is useful for a conservatory, or a warm situation in the window. Pot first into sandy loam and peat, afterwards use a good portion of old lime rubbish, which will cause masses of blooms to be thrown up. Sow in boxes as already recommended for seeds.

TROPÆOLUM.—See Nasturtium, page 88, where it is stated that the Tall Nasturtium is *Tropaeolum majus*, and the Dwarf Nasturtium is *T. minus*. These plants, as ordinarily raised from seeds, are called Nasturtiums, but there are several choice varieties of these, and some related climbing species, such as *T. Lobbianum*, that florists always call *Tropaeolums*, by the way of indicating that they are finer than the common garden kinds. But by either name they are most useful in the window or conservatory, where, if given a sunny place, they will bloom profusely all winter.

VERBENA.—An ancient Latin name for some sacred

herb. Nat. Ord. *Verbenaceae*, the Verbena Family. A large genus of annual and perennial herbs, some of which are coarse and unsightly weeds; others are among our most beautiful and popular flowering plants. Our garden Verbenas are derived from *V. chamaedrifolia*, and several other South American species, which have been hybridized and crossed until the origin of any particular variety is difficult to trace. Scarcely a plant is more popular than the Verbena, and it is too well known to need a description. It is one of the most useful plants for summer decoration. Where Verbenas are required in quantities, they are more easily obtained from seed than by cuttings. Besides, in raising seedlings, there is a chance of obtaining new varieties. It is by raising seedlings that the leading florists obtain their new varieties for which they charge an extra price. If seeds are sown in January or February, the plants, when large enough, potted in small pots and kept in a cool temperature of say 40° in the day, with 35° or 33° or less at night, will make fine plants for the garden in spring, and bloom all summer profusely. For Verbenas to bloom in the window or conservatory in the winter, sow them from July and August to September, and re-pot as needed. I have had a fine plant in a 6-inch pot hanging down from the ceiling, which was a perfect mass of rich scarlet blooms all winter. Verbenas require good rich soil and plenty of sun.

Wallflower.—*Cheiranthus*, an Arabic name. Nat. Ord. *Cruciferae*, the Mustard Family. *H. H. P.*, 2 feet. The well-known Wallflower, *C. Cheiri*, from Southern Europe, has been in cultivation for centuries, and is everywhere valued for the fragrance of its flowers. Treatment the same as for Stocks.

In addition to the plants enumerated above there are many more that can be grown in window culture, and from seed; and the list may be greatly enlarged accord-

ing to one's taste. Annuals need not be sown so early as perennials, as they grow very quickly after the seeds are sown, and bloom in a very short time, while the perennials do not. Therefore, for winter blooming, always sow the seeds of perennials in the months of August or September, and for summer blooming about January to February.

Sow annuals about six weeks before you wish them to bloom. In other words, if you wish to have a fine box of Mignonette, Candytuft, or other annuals, in bloom for Christmas or New Year's, the seeds must be sown in boxes or pans, or whatever else is to hold them, about the first or second week in November; better a little earlier than later. If they are found to be behind time, give them a little more heat so as to force them on.

As it is easier for amateurs to propagate plants from seeds, I should recommend this as the best and also quickest method in which to raise a large number of plants with but little outlay. In this way, by commencing in February or March, you can raise all the plants that will be needed for planting in the garden in spring, and they will give all the more pleasure from being grown by yourself.

CHAPTER XXXIV.

LILIES, THEIR CULTIVATION.

For grace, beauty, purity and fragrance, the genus *Lilium* is equalled by no other. No description can convey a true idea of their loveliness. The artist who attempts to portray their beauty is sure to fail to do them justice. The Lily has always been revered and loved; as we see it mentioned in the history of all ages, and it is to-day the most popular hardy plant in cultivation.

For many years the Lily has had a great run of popu-

larity in Europe, but it is only recently that it has received special attention in this country. Previous to 1879, few growers or dealers here possessed more than a dozen species or varieties, and little or nothing was known of the many rare and beautiful species in cultivation in European gardens. Grand and noble species, which a few years ago were comparatively unknown, now adorn our home gardens throughout the length and breadth of the land, and in a few years more we may expect to see most of the finer species and varieties in general cultivation.

The greatest need now of our people as regards the culture of the Lily, is a thorough knowledge of its requirements. No plants do better under proper treatment, and none do worse when treated improperly. Although most of the species succeed well with ordinary garden culture, a little good management will produce marvellous results—but we have yet many things to learn concerning them, and perhaps the most important is, to patiently wait for them to get well established, before we expect them to produce the best results.

One should not pet and nurse them for the first six months or a year after they have been planted, and then, leaving them to care for themselves, complain because they do not grow larger and faster. They need steady and continued care.

CULTURE.

A volume might be written on the cultivation of Lilies and still leave the planter in doubt as to what course to adopt. What might do well with one species, may prove fatal with others, which require a different soil or climate. However, if the following points are carefully observed, the planter can expect good success with nearly or quite all the species.

These conditions are by no means always necessary to

attain good success, for many roots will grow anywhere, as freely as potatoes; but it is best to be on the safe side and give all varieties good care, attending to the following points:

1*st.*—As a rule the bulbs should be planted 5 or 6 inches deep, in mellow, well pulverized rich soil.

2*nd.*—The drainage should be such, that all surface water will run off easily. Nothing will injure bulbs more than stagnant water around them. They should also have good bottom drainage.

3*rd.*—The soil should be kept clear of weeds, and well worked.

4*th.*—It is not advisable to transplant the bulbs oftener than once in four years, for unless their new quarters are much superior to the old, they will do far better if left undisturbed.

5*th.*—Bulbs should not be planted on freshly manured soil, and artificial fertilizers should never be used. Old, well pulverized manure is desirable to mix with the soil in small quantities when planting, or for the top-dressing in after years.

6*th.*—Mulching in hot weather is desirable, and all flowers should be cut off as soon as they fade, as they will exhaust the plant by forming seed.

7*th.*—Stable manure should be used with leaves or other coarse litter in covering the bed in winter.

GROWING LILIES IN FRAMES.

If the choice varieties are to be cultivated to any great extent, the frame method is very desirable, especially if mice or moles disturb the bulbs. Frames can be constructed of any length and breadth desired, and of the roughest and cheapest boards. The frame should extend 12 to 18 inches below the surface of the ground and 6 to 12 inches above. This depth will obstruct the subterranean passage of mice and moles, and to a great extent

will keep out the roots of trees, shrubs, etc. Dig out the soil to the depth of two feet, and fill in with sandy loam, mixed with a small quantity of well-rotted stable or barnyard manure. Covers, light board shutters, should be provided and kept on all winter, and during storms in the autumn or early spring. This protection will be of great benefit to some kinds, which are sensitive to excessive wet during the winter season. The frame method is by far the best for all the rare and expensive varieties, as they can, in that way, be grown with the greatest success.

INSECTS.

Above ground Lilies are seldom attacked by insects, except under glass. I know of no class of plants so generally shunned by all the destructive garden pests. The bulbs, however, sometimes suffer from the attacks of worms, which eat them, making a cavity, which in wet spells fills with water and causes them to decay. As manure attracts worms, it should not be used to mix with the soil, unless it is old and well pulverized, and then not in too great a quantity. The Green-fly or Aphis often attacks Lilies under glass, but this is easily exterminated by the use of Fir-tree Oil.

WHEN TO PLANT LILIES.

A great deal of failure is due to planting bulbs at improper seasons. The time recommended as being the best is the months of October, November, March and April. Many fail from planting late in the spring after the weather has become hot and dry, which causes the bulbs to decay before they can form roots and commence growth. Of course, where the climate will permit, bulbs can be planted at any time during the winter, but if it can be done in the Autumn, it would no doubt be better.

Bulbs should always be planted as soon as received, or packed in soil until planting time. Nothing injures them more than to be exposed to the air, or to lay around in a dry state.

HOW TO KEEP AND COLLECT BULBS.

Lily bulbs should not be kept out of the soil for any length of time. If you have them on hand, and are not ready to plant them, they should be kept in pots or boxes of soil slightly moist, or what is better, if it can be had, well pulverized leaf mould from the woods. They should be kept in a cool cellar or pit. Care should be taken that the soil is not too wet, for if so, it will encourage the bulbs to commence to grow. In this way bulbs can be kept all winter, if necessary, in excellent condition.

The fact that wild lilies are not easily found, except while in bloom, makes it quite necessary that they should be collected at that time. This can be done without greatly injuring them, if the bulbs are carefully lifted, and the stems cut off close to the bulb, which should be at once buried, or planted in good soil, if wanted for shipping, or for permanent planting in autumn.

FORCING LILIES.

The only Lilies which can be recommended for early forcing, are *L. candidum*, *L. longiflorum*, and its varieties, the most valuable of which is *L. longiflorum Harrisii*. To force them, work should be commenced in September, by potting strong healthy bulbs in six inch pots of rich soil. The pots should be plunged in the ground, and covered with a few inches of soil, to prevent drying out and freezing. In November or December they should be brought in and placed in a warm, sunny situation, where they will at once commence growth, and will flower in February and March. Water should be given freely

while growing, and it will be a good plan to syringe them every day. In a well kept greenhouse, Lilies treated in this manner will be quite sure to succeed. We have often known them to do well in a window garden, but if they are obliged to grow in a dry and dusty atmosphere, little success can be expected; all kinds of Lilies can be potted in the manner above described, and brought into the greenhouse in February, where they will bloom in May, or perhaps some sorts will flower earlier.

BLIGHT ON LILIES.

Some complain that many of their Lilies drop their leaves and die down just at the time when they are about to come into bud. This has never been observed among the common kinds, like the *Speciosum*, *Tigrinum*, *Umbellatum*, *Longiflorum*, etc., and it occurs chiefly among the Californian and some foreign species. It appears the first year. If they are planted at a proper depth, and in a partly sheltered situation where the full rays of the hot sun will not strike them all day, they will not likely be attacked by blight after the first year, and never after the bulb has become established and healthy. When the first appearance of the disease is observed, the Lilies can usually be saved by shading and dusting them a few times with flowers of sulphur.

LILIES THAT ARE EASILY GROWN.

For the benefit of many who wish only a small variety, and desire the most robust and hardy kinds, which will do well in any ordinary garden, with a little care, I submit the following list, all of which are fine, hardy, robust sorts, which will succeed in almost any climate and situation from the hottest to the coldest.

L. auratum (the Golden-Banded Lily), has been considered by many a very difficult sort to grow, but the whole trouble is owing to the unhealthy imported bulbs.

But with strong, home grown bulbs it is one of the surest of all Lilies to do well.

L. auratum, and its varieties.
L. Batemanniæ
L. candidum, and its varieties
L. croceum
L. elegans, and its varieties.
L. Hansoni
L. Leichtlini
L. longiflorum, and its varieties,
L. Martagon, and its varieties,
L. Maximowiczii,
L. Pomponium verum,
L. speciosum,
L. tenuifolium
L. superbum
L. tigrinum, and all its varieties.
L. umbellatum, and all its varieties.
L. Wallacei

Lilium auratum.—This species grows from two to six feet high ; leaves, long and narrow ; bulb large, yellowish brown ; flowers from two to fifty in number, and eight to ten inches in diameter, pure white, with deep or light yellow bands through centre of each petal, which are surrounded with small crimson or brownish spots. The color of the bands and the number of spots vary greatly. No two flowers are alike ; blooms in July or August. Should be planted 6 inches deep, in rich soil without manure. They succeed best in a dryish, well drained soil. It has been thoroughly proved that *L. auratum* does better here than in Japan, its home, where it grows wild among the hills and woods so abundant in some places, as to nearly cover the whole ground. It is perfectly hardy, standing the severest winters in the New England States without injury. With imported bulbs about half will fail to grow, and those that do grow, will require two years to become established.

Home-grown bulbs are the hardiest, healthiest, and in every way the best. The *auratum,* like most other Lilies, succeeds admirably when grown in pots. The following are the particulars of the specimen illustrated in the *Gardener's Chronicle,* of London, February 15th, 1873:

"A single bulb, measuring two inches in diameter, was obtained early in 1865. It was potted in a 7-inch pot, and placed in a cool greenhouse, where it produced three flowers on one stem. In 1866 it was repotted in a

9-inch pot, and received similar treatment; the plant threw up two stems, producing altogether 17 flowers. In

Fig. 67.—LILIUM AURATUM.

1867 it was again re-potted, into a 11-inch pot, where it threw up three stems, which bore fifty-three flowers. In

1868, it was shifted into a 16-inch pot; it threw up twelve stems, producing altogether 100 flowers. In 1869 it was placed in a 17-inch pot, and threw up thirty-nine flowering stems, from two to nine feet in height, which produced 193 flowers. The next year the bulbs were left undisturbed, and threw up forty-three stems with 208 flowers."

The following are the most distinct varieties of *L. auratum:*

Rubro-vittatum.—Flowers of pure ivory whiteness, with broad crimson bands and numerous crimson spots, which are large and vivid.

Cruentum.—A dwarf form with large flowers, the bands of which are narrow, darkening to the center; spots purplish crimson.

Pictum.—The lower third of the petal marked with a broad red streak, not a very distinct variety.

Rubro-pictum.—Bands yellow on the lower half of the petal and light crimson at the apex. Spots also crimson.

Emperor.—The eye is golden yellow and the whole flower, except the margin of petal, is suffused with a rich blood-red tint. As in *Speciosum-rubrum*, spots and blotches also appear of a darker color. A very distinct and beautiful form.

Virginale.—Colors only yellow and white, the spots and band being all yellow.

Wittei.—Petals broad and short; in other respects nearly the same as Virginale.

Macranthum.—This variety is said to have larger and broader petals than any other form.

LILIUM BATEMANNIÆ.—Three to four feet high; flowers, three to twelve in number, erect and of a deep apricot tint, unspotted; a native of Japan, and blooms in August. A new Lily of great merit. It is probably a garden hybrid between some such species as *L. Leichtlini*,

L. Maximowiczi, or *L. elegans.* In general habit it greatly resembles *L. Leichtlini.* It was named and introduced into England in 1875, by Dr. Wallace, and has

Fig. 68.—LILIUM BROWNII.

since become very popular. It is as easy to grow as the old Tiger Lily, thriving in all soils or climates, in shade or sun, or in moist or dry soil. It will stand any degree

of frost without injury, even if not protected in the least. A highly valuable sort for general cultivation.

LILIUM BROWNII.—Two feet high, bearing from one to three flowers, six inches in length, pure white inside, outside a rich chocolate brown, very fragrant. A native of China, and flowers in July. There is much uncertainty as to the true name of this magnificent Lily. Some call it *L. Japonicum*, others *L. Brownii*, and still others say that the two names represent two distinct species. *L. Brownii* has been considered by some a very difficult species to grow, whereas the whole secret of success is in getting healthy bulbs, which are not always easily procured, as the demand in this country is mostly supplied with imported bulbs, which seldom arrive in good condition, as they are very sensitive to rough handling and to being kept long out of the ground. With good home-grown bulbs, or those which have been properly imported, the amateur can expect good success.

LILIUM CANDIDUM (White Lily).—Three to four feet high; flowers of the purest white, and from four to twenty in number; very fragrant; blooms in June; a native of Southern Europe. This is the well-known Easter Lily, which has been in cultivation for 300 years. A very hardy and robust species, growing well in any situation, and its pure, sweet flowers are always greatly admired. One of the most valuable for forcing. Its varieties are:

Maculatum-striatum. — Flowers streaked with purple on the outside.

Peregrinum.—A slender grower with purple stems and narrow leaves. Not much cultivated.

Leuco-marginatum.—Foliage has a broad golden margin; flowers of the purest ivory whiteness.

Flore-pleno (*speratum monstrosum*).—A double-flowered form of but little value.

Speciosum.—A smaller and earlier variety.

LILIUM LONGIFLORUM.—Two to three feet high, and a strong grower. Flowers two to ten, pure white, trumpet-shaped, six to nine inches long, and fragrant. Blooms in July. From China and Japan.

This is one of the best known trumpet-shaped species. The following are its chief varieties :

Fig. 69.—HARRISII.

Eximium, or Wilsoni.—A variety producing larger and longer flowers than the old type.

Takesima.—The flowers are marked outside with a purplish tint.

Albo-marginale.—The leaves of this variety are bordered with a wide band of white.

Madame von Siebold.—A large flowering sort.

HARRISII ("Bermuda Easter Lily"), figure 69.—A

variety of quite recent introduction. Established bulbs will produce fifty or more flowers on a stem, and it blossoms much earlier than the other varieties. Even small

Fig. 70.—FLORIBUNDA.

offsets from the bulb will bloom the first season. Plants are dwarf and compact; flowers larger than any of the others, and the bulbs will bloom two or three times during

the year, if kept growing in pots with plenty of rich soil. It has with us done so more than once. An excellent variety for forcing, both in the window and greenhouse.

FLORIBUNDA, figure 70.—This Lily has been largely sold as *L. Harrisii*, or the "Bermuda Easter Lily," but it is in all respects inferior to that as a pot plant. The true *L. Harrisii* is a Japanese Lily; *floribunda* is a

Fig. 71.—LILIUM SPECIOSUM.

Bermuda Lily, not much better than the common *L. longiflorum*, the only advantage is that in good cultivation it will produce a larger number of flowers on a single stalk.

LILIUM SPECIOSUM (commonly called *L. lancifolium*). —Two to four feet high, robust and strong. Flowers three to fifteen in number, large and drooping; color (in

the type) white, shaded with rose and spotted with crimson. Native of Japan, and blooms in August and September. This Lily, figure 71, taken with all its varieties, is probably the most desirable species in cultivation. It is sure to thrive in any situation, and its beauty will be a surprise to all who are unacquainted with it.

One can expect excellent success with it in pots, and find it of easy culture, especially the first three named varieties.

Roseum.—White and pale rose, spotted darker, very fine, and easily grown in pots.

Rubrum.—Deep rose, spotted darker. These two sorts vary greatly in color on different soils, and are often so near alike that it is difficult to distinguish them, and most florists and bulb merchants sell one for the other.

Album.—A pure white sort, of as easy culture as the above.

Punctatum.—Pale pink, spotted.

Purpuratum.—Very dark.

Præcox.—White, tinged pink, stronger grower.

Kratzeri.—White, with greenish stripes.

Vestale.—Purest white, quite new.

Roseum verum.—Very light green foliage.

Schrymakeri.—Dark crimson.

Melpomene.—Deep blood-red, with white border.

Multiflorum.—White, but little if any different from *album.*

Atropurpureum.—Dark.

Punctatum corymbiflorum.—Like *Punctatum,* except it produces many more flowers.

Monstrosum-roseum. — Pale rose, spotted. This variety produces larger, often flat stems, on which are borne immense clusters of blooms, containing from twenty to fifty flowers. It is truly magnificent.

Monstrosum-album.—Is like the above, except it

is pure white in color. These two lillies will be sure to give great satisfaction. Their large clusters of blooms are truly grand.

WALLACEI, figure 72.—One to three feet high; flowers

Fig. 72.—WALLACEI.

erect, orange yellow, spotted black, well open and very beautiful. Each bulb throws up from three to four flowering stems. Native of Japan, and blooms in August. An exceedingly fine Lily allied to *L. Leichtlini,* easily grown and sure to please.

CHAPTER XXXV.

LILY OF THE VALLEY.

CONVALLARIA, name altered from the Latin *Lilium convallium*. Nat. Ord. *Liliaceæ*. *C. Majalis* (see fig.

Fig. 73.—LILY OF THE VALLEY.

73) is a plant so well-known and such a universal favorite, that little need be said by way of description, unless we add that of Gerarde, in 1659, which is as follows: "The Lily of the Valley hath many leaves like the smallest leaves of Water Plantaine. Among

which riseth up a naked stalk, half a foot high, garnished with many white flowers, like bells, with blunt and turned edges, of a strong savour, yet being pleasant enough, which being past there comes small red berries, much like the berries of asparagus, wherein the seed is contained." A modern writer in the Treasury of Botany says: "Without poetical or fanciful conventionalities, the Lily of the Valley is as perfect an emblem of purity, modesty and humility, as the floral world can afford. It may seem idle to observe that a flower of this description cannot be that referred to in the Sermon on the Mount, but as that opinion is frequently broached in popular works, it may simply be observed that it never grows in the open field, and that there is nothing in its array to which the term 'glory' is applicable. Not a little unprofitable commentary might have been spared, if the same general meaning had been attached to the term 'Lilies of the Field,' which has by common consent, been ascribed to the parallel phrase 'Fowls of the Air,' while the passage itself would have gained in force and dignity by being kept clear from botanical disquisitions."

The flowers of the Lily of the Valley are used during the winter months in great quantities, New York City alone probably using a million spikes, the average price is about five cents each, so that for this flower alone $50,000 is annually paid by the bouquet-makers to the florist; the consumer, no doubt, paying one-third more. A florist in Philadelphia makes it a specialty to have them in bloom all the year round, both summer and winter, but they cost him a good price, as the bulbs, or rather pips or clumps, are stored in ice-houses through the summer and are dormant; these are taken up and picked over, the good ones forced in forcing houses, built especially for this purpose; but he loses so many by this process that it hardly pays him for the trouble. Still he has the name of being the only one that does such a

thing. The Lily of the Valley is nearly all imported from Germany and France, usually in single crowns, or as we term them "pips;" the best are from Germany, as they do much better, making longer spikes of flowers, and open more evenly.

For those wishing to plant a bed of them in their back yard, it is best to get the clumps and plant them out. They do well in the garden, and may be put under the shade of trees; but wherever placed, the roots should not be disturbed for several years, if at all, as many clumps will not otherwise bloom. They are propagated by division of these roots. The back part of the yard, where the sun does not strike them too quickly, is an especial good spot for them.

For window culture it is best to pot from 5 to 6 pips in a six-inch pot, use light rich soil, and bury pot and all outdoors in the garden border, cover lightly with straw, leaves or litter of any kind, so that you can get at them during the winter when the ground is frozen. Let them stay out until they are well frozen and then take them in as you need them, pot after pot. When you put them in the window do not at once set them in the sunlight, but expose to it gradually. Cover the surface of the soil with an inch deep of common sphagnum moss, such as florists use to fill wire frames, see that the pips are well covered with this, and also see that they are kept well watered. This moss should never be allowed to get dry. If forced too quickly, the flowers will not be as fine, as they will be, when given gentle and regular heat, and fewer will be lost by not blooming. When forcing them on a flue or hot water pipes, it is best to set the pots in a box of sphagnum moss, and keep it well watered. This prevents the pips from drying out. They bloom before they have taken root, and must be well watered and sprinkled. I have had excellent success in this way and raise them for the holidays in large numbers.

CHAPTER XXXVI.

THE AQUARIUM.

An aquarium well filled and stocked with plants, fish, etc., is one of the finest ornaments one can have in the

Fig. 74.—THE AQUARIUM.

room. There are many varieties, styles, designs and patterns made now, but for a small room the Table Aquarium, shown in figure 74, to my taste is as neat an orna-

ment as one can have, being of cut glass, with an iron frame for holding the glass globe.

Another neat and not very costly ornament, is the small iron flower stand, fig. 75, which by setting an ordinary hanging glass fish globe on the top cup, and three pot plants on the other three cups, makes quite an unique and ornamental design for the parlor table.

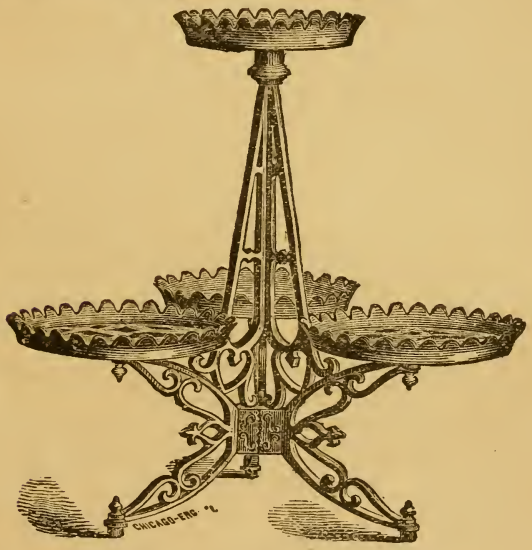

Fig. 75.—IRON FLOWER STAND.

How to Fill the Aquarium.—First cover the bottom of the tank or globe to the depth of one-half inch with pure, fine, well-washed sand, on top of which put an equal quantity of fine gravel; over this gravel sprinkle small ornamental stones, shells, coral, etc. Every thing put into the tank must be thoroughly washed. Next, put in position an ornamental center-piece of coral, stone, or anything out of which you can construct an arch, through which the fish can readily swim; now fill

the tank about one-third full with pure cold water. Never put in ornaments of any kind that have been painted, as the water will cause the paint to chip off, and the fish are always sure to get the small particles and often die from them.

PLANTS.—The best aquatic plant for aërating the water in the aquarium is *Anacharis Canadensis*, found growing under water on the bottom of nearly all sluggish streams and ponds. The *Valisneria spiralis* (Eel-grass), is the next best, after which come the *Myriophyllum spicatum* and the *Myriophyllum verticillatum*. There is a species of *Conferva* found in rapid streams, attached to stones, that is an excellent aërater, valuable especially during the winter, when other plants do not flourish. If you get the *Anacharis*, remove all decayed stems and leaves, wash clean, and arrange in bunches of ten to fifteen. Make a hole in the sand, insert the butt ends of the plants, and secure in this position by pressing small stones about them. Insert in this way about six or eight bunches, and be careful to make them secure at the bottom. Roots are not necessary, as the cuttings will soon send out fine white rootlets. Now you are ready to fill up the tank with water to an inch and a half of the top. Wait two or three days before introducing the fish, that the plants may have time to commence growing.

THE FISH.—Almost any small species of fish may thrive in the aquarium, but we think the best for the purpose are the Red-bellied Minnows and Sticklebacks, found in small streams of fresh water. Select small fish; from four to eight for a tank holding from eight to twelve gallons. Such a tank will support four small ones to one larger. Introduce also ten to twelve water snails. The *Lymnæ* are the best; yet the *Planorbis* and the *Physa* are interesting. Better, however, are a few of every kind you can find in the fresh water ponds and stagnant pools in your vicinity. They feed on the

softer parts of aquatic plants, and do not exhaust the oxygen mixed with the water, as they are air-breathing, and have to come to the surface to take in a supply of air, to be used while they go about cleansing the plants and the glass of the tank with their curiously contrived jaws.

Food.—The best food for fish is small angle worms and flies in summer, and fine bits of fresh, raw meat in winter. Never give the fish more than they can eat at one time, for whatever is left will injure the water.

Position.—The best place for the Aquarium is where it will be exposed to the sun at least one hour each day, in order that the plants may exhale oxygen, which can only take place under stimulus of light. Too much light, however, is to be avoided, as the fish do not thrive when exposed to the sun, and the glass will be soiled by the *confervæ*, a green vegetable matter, which sticks to the glass. In summer an outdoor position is the best, if there be sufficient shade. It is well to cover the Aquarium, both for the shade and to keep the fish from leaping out of the tank, placing small blocks of wood underneath to allow the air to pass under; if in a shady place cover with a wire screen.

Cleaning the Aquarium.—If well balanced with plants, fish and shells, the water will remain sweet for an indefinite time. We have known an aquarium that has been in service for the last twelve years, and which does not require a change of water oftener than once or twice a year, and then only to renew the sand, which becomes filled with excrementitious matter.

Benefits.—A well regulated aquarium is a beautiful ornament for the home, and one which is a perpetual source of amusement and instruction. It has the peculiar advantage of making us acquainted with forms and habits of animated existence, which are commonly hid from our inspection. Thus its influence upon the family

circle is wholesome and elevating, tending to awaken in all the members, both young and old, an increased love for the contemplation of the wondrous skill and wisdom of the great Creator.

Amphibious Animals.—If lizards, frogs, and other amphibious animals are introduced, they should be provided with some place above the water to climb upon. The rocks may be built above the water, or a piece of flat cork may be allowed to float upon it, where the animals will climb, and produce no small amount of amusement and instruction.

Salt Water Aquaria are even more interesting than those containing fresh water, as they allow us to observe the habits of animals which are peculiar to sea water, and are very seldom seen. These aquaria are very difficult to establish by those who live at a distance from the seaside, and unless the balance between vegetable and animal life is properly maintained, the whole suddenly collapses and must be started anew. The plant mainly relied upon to aërate salt water is the dark green *Ulva*, so common on the seashore, and by fishermen called "oyster green" and "Sea Lettuce."

CHAPTER XXXVII.

IMPLEMENTS.

Use will be found for one or another of the implements mentioned in this Chapter. The most complete and cheapest set of tools for ladies and children is that shown in fig. 76. It consists of a spade, fork, rake, and hoe, all made of the best steel, handsomely finished, and intended for service, and not toys. The "Excelsior Weeder," fig. 77, is also much used in the conservatory for loosening the soil in boxes, or in the garden in the summer for

weeding among small plants; it is shaped like a hand and prevents one from soiling the hands.

The Trowel, fig. 78, is much used in room culture as well as in the conservatory, in filling hanging baskets, plant stands, etc.; they are also required for use in the garden. Trowels are made from 6 inches long upwards.

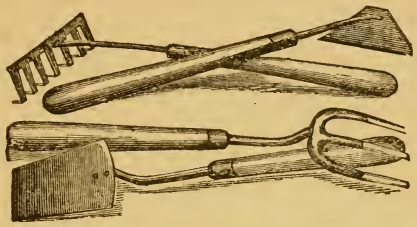

Fig. 76.—SET OF GARDEN IMPLEMENTS.

Fig. 77.—EXCELSIOR WEEDER.

Fig. 80.
SHOVEL.

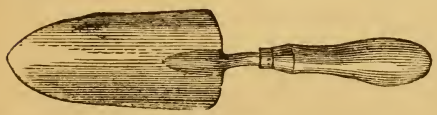

Fig. 78.—TROWEL.

Fig. 79.—SPADE.

The Spade, fig. 79, is much used by those having many plants, and is required in the garden for digging up sods or soil, and spading the borders. The Shovel, fig. 80, is also needed for shovelling up the soil, in sifting, or for throwing garden rubbish into the wheelbarrow. Those having only a few plants will find in the garden set, fig. 76, all they will require.

In addition to tools mentioned in other parts of this book, and those just named, there are but a few more which are used by those having a large or small garden, but as this book does not treat upon that part of floriculture, it is not necessary to mention them.

CHAPTER XXXVIII.

THE WINDOW GARDEN OUT-DOORS.

A few hints may not come amiss here for outside window gardening. We will first consider watering. When pots are exposed directly to the sun, and also to the wind, the soil in them will naturally dry very quickly, and they may require watering very often. Give them plenty of water, and if they are not planted in the window box, use the precaution to pack moss around them. Never shade them from the sun, as it will not injure them if they are well watered. Some may not have a yard where the winter flowering plants can be plunged, as described in Chapter XVIII. In that case, place those desired for the winter between those now out of doors on the shelf, and allow every other one to bloom, while every alternate one is prevented from blooming. This done, and there will be plenty of flowers all summer, and also a supply for the room in winter.

Nearly all the remarks given for the treatment of plants in-doors hold good for their treatment when placed outside. Of course, we need no heating—it is summer, and the sun does that for the plants; nor is airing needed, as the plants are out-doors both day and night. No danger of frost need be feared. There will be needed the same soil and fertilizers as are required in-doors, the same care in watering, and especially in syringing,

which must be done very often, as the dust from the street will cover them. Dust prevents them from growing—no plant covered with dust or dirt will be in a healthy state. Watering will be required, it may be, once, twice, or even four times a day, so that the plants may never get dry and rusty looking, as plants in this condition at once spoil the appearance of the window. If plants once get into this condition, it takes weeks for them to recover. Smoking will be needed, as insects will also trouble plants when out-doors. Such other treatment should be given as judgment shows that they need. For drooping flowering plants, the outside window of course is the only place, unless pot brackets are used, which can be so fastened that they will serve for both summer and winter, by swinging them in or out.

CHAPTER XXXIX.

DESIGNS MADE OF DRIED EVERLASTING FLOWERS, ETC.

Some of the readers of this book may wish to decorate their rooms with flowers, but do not care to have the trouble of attending to them. To those I would recommend the designs made of dried Natural Flowers, Grasses, and Mosses. These designs will retain their shape and beauty for years, and need only to be occasionally shaken to remove the dust that may settle on them.

Fig. 81 is a Hanging-Basket filled with dried Everlasting Flowers and Grasses, in their natural colors. Some are colored, and they are the most elegant article of the kind ever seen in this country. They are filled with such flowers as Acrocliniums, Ammobiums, Helichrysums, etc., which are tastefully arranged with various Grasses.

Such a basket makes an elegant parlor ornament, and is very durable. The ornamental Grass Bouquets, fig. 82, are composed of Natural Grasses, dyed in various colors,

Fig. 81.—HANGING BASKET WITH DRIED FLOWERS.

and very beautifully arranged. The colors are particularly bright and durable, and the Bouquets form desirable ornaments for filling vases in the parlor or sitting-room, and retain their shape and beauty for several years.

Fig. 83 shows one of the Bouquets made of Everlasting

Fig. 82.—GRASS BOUQUET.

Fig. 83.—BOUQUET OF DRIED FLOWERS.

Flowers and Grasses. It is just as durable as the Grass Bouquets, and is preferred by some.

Fig. 84.—WALL POCKET.

Fig. 85.—DESIGN WITH FERNS.

The Wall-pocket Basket, fig. 84, filled with Grasses, Ferns, and Flowers, makes a very neat ornament to hang

on the wall between or underneath picture-frames, or to stand on the mantel-piece.

Fig. 85 is also a very neat design of this class. It is made of pressed Ferns, Grasses, and Flowers, with a beautifully colored Butterfly made of paper. This is arranged on card-board, with a piece of cork to imitate a shell or log, and the Grasses and Ferns glued on the back of the cork as if they were growing behind the log. It can be easily framed as a picture, with or without glass.

Fig. 86.—STRAW BASKET WITH FLOWERS AND GRASSES.

Fig. 86 shows the latest style of filling Straw Baskets with these dried Flowers and Grasses, and has been much admired by all who have seen it. All Jardinières, such as those in figs. 88, 89, 90, will fill beautifully in this style.

The Swiss Moss Baskets, fig. 87, filled with Flowers and Grasses, are very neat for setting on the table or mantel-piece. Any kind of basket can be filled with

these dried Flowers and Grasses, as the taste may suggest. The same materials can also be made into wreaths,

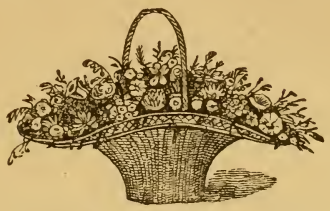

Fig. 87.—SWISS MOSS BASKET.

crosses, anchors, stars, etc., for decorating the room, halls, churches, etc., for Christmas, and after using them they can be packed away, where mice and dust can not reach them, for next year's use.

The following Jardinières can also be easily employed for this purpose ; they can likewise be used to grow Hyacinths

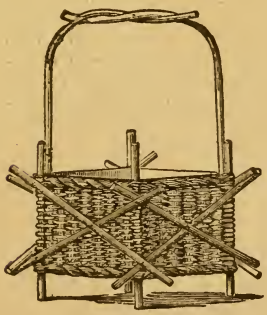

Fig. 88.—WICKER-WORK JARDINIERE.

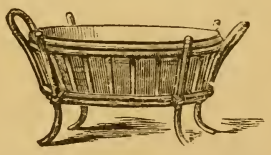

Fig. 89.—OVAL JARDINIERE.

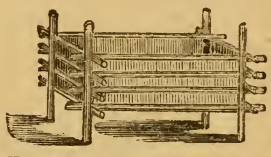

Fig. 90.—SQUARE JARDINIERE.

in, as they are provided with zinc pans. They make very beautiful ornaments when the bulbs are in flower, and they will do well in them, as Hyacinths like a good share of water. These can all be bought of any florist.

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